

REPORT DOCUMENTATION PAGE			<i>Form Approved</i> OMB No. 0704-0188	
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1. REPORT DATE (DD-MM-YYYY) 30-11-2011		2. REPORT TYPE Final		3. DATES COVERED (From - To) November 2010-November 2011
4. TITLE AND SUBTITLE Report on the Domestic Natural Disaster Health Workforce			5a. CONTRACT NUMBER	
			5b. GRANT NUMBER	
			5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Kenneth Schor, Tim Moriarty, Laurie Chow, Cynthia Hovor and Kandra Strauss-Riggs			5d. PROJECT NUMBER	
			5e. TASK NUMBER	
			5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) National Center for Disaster Medicine and Public Health 11300 Rockville Pike, Suite 1000 Rockville, MD 20852			8. PERFORMING ORGANIZATION REPORT NUMBER NCDMPH-2012-01	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) United States Department of Health and Human Services 200 Independence Avenue, S.W. Washington, D.C. 20201 Uniformed Services University for the Health Sciences 4301 Jones Bridge Road Bethesda, MD 20814			10. SPONSOR/MONITOR'S ACRONYM(S) HHS / USUHS	
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION / AVAILABILITY STATEMENT Distribution A: Public Release; Distribution is unlimited. The United States Department of Health and Human Services verifies that this document has unlimited distribution.				
13. SUPPLEMENTARY NOTES Partially fulfills Interagency-approved strategic plan in response to HSPD-21, para. 38, tasking.				
14. ABSTRACT The National Center for Disaster Medicine and Public Health (ncdmph.usuhs.edu) prepared this report to describe selected aspects of the health professions workforce who would respond to a catastrophic domestic natural disaster. The report analyzes core Federal departments supporting Emergency Support Function #8 (ESF#8), Public Health and Medical Services, of the National Response Framework; examines three key occupational sub-groups first at the National level then the State (California) and local level (Los Angeles): emergency and critical care physicians, emergency and critical care nurses, and paramedics; uses a pilot case study focusing on a theoretical major earthquake scenario in the southern California region to describe the anticipated local, State, and Federal ESF#8 workforce responding to the fictional earthquake; and incorporates feedback from a multi-stakeholder conference. Recommendations are provided regarding: double counting of responders, volunteer failure to respond, an aging medical workforce, human capital development, personnel asset visibility, readiness, deployment of sub-units, and updating and expanding the current report. The understanding of the "who" of the workforce provides the skeleton for appending the "what" of competencies and standards and the "how" of curricula. This report informs Federal partners as they seek to develop supporting policies, plans, programs, and exercises.				
15. SUBJECT TERMS Emergency Support Function #8 (ESF#8), Responders, Disaster Health, Workforce, Disaster Medicine, the National Center for Disaster Medicine and Public Health (NCDMPH), Disaster Case Study, Preparedness, Volunteers, Natural Disaster				
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT None	18. NUMBER OF PAGES 203
a. REPORT Unclassified	b. ABSTRACT Unclassified	c. THIS PAGE Unclassified		
			19a. NAME OF RESPONSIBLE PERSON Elizabeth Brasington 19b. TELEPHONE NUMBER (include area code) (240) 833-4444	



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Report on the Domestic Natural Disaster Health Workforce

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Reporting Period: November 2010—November 2011

**NCDMPH-2012-01
November 30, 2011**

Distribution A: Public Release; Unlimited distribution.
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ABSTRACT

The National Center for Disaster Medicine and Public Health (ncdmph.usuhs.edu) prepared this report to describe selected aspects of the health professions workforce who would respond to a catastrophic domestic natural disaster. The report analyzes core Federal departments supporting Emergency Support Function #8 (ESF#8), Public Health and Medical Services, of the National Response Framework; examines three key occupational sub-groups first at the National level then the State (California) and local level (Los Angeles): emergency and critical care physicians, emergency and critical-care nurses, and paramedics; uses a pilot case study focusing on a theoretical major earthquake scenario in the southern California region to describe the anticipated local, State, and Federal ESF#8 workforce responding to the fictional earthquake; and incorporates feedback from a multi-stakeholder conference. Recommendations are provided regarding: double counting of responders, volunteer failure to respond, an aging medical workforce, human capital development, personnel asset visibility, readiness, deployment of sub-units, and updating and expanding the current report. The understanding of the "who" of the workforce provides the skeleton for appending the "what" of competencies and standards and the "how" of curricula. This report informs Federal partners as they seek to develop supporting policies, plans, programs, and exercises.

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ACRONYMS & ABBREVIATIONS

A

AACN	American Association of Critical-Care Nurses
ABEM	American Board of Emergency Medicine
ABIM	American Board of Internal Medicine
ABMS	American Board of Medical Specialties
AC	Active Component
AE	Aeromedical Evacuation
AEMT	Advanced Emergency Medical Technician
AFI	Air Force Instruction
ALS	Advanced Life Support
AMC	Air Mobility Command
AMR	American Medical Response
ANG	Air National Guard
ANGUS	Air National Guard of the United States
AOR	Area of Responsibility
APHT	Applied Public Health Teams
APOE	Aerial Port of Embarkation
AR	Army Regulation
ARNGUS	Army National Guard of the United States
ASD	Assistant Secretary of Defense
ASMC	Area Support Medical Company
ASPR	Assistant Secretary for Preparedness and Response
AST	Aviation Survival Technician; Ambulance Strike Team
AT&L	Acquisition, Technology and Logistics

B

BCHD	Beach Cities Health District
BCMRC	Beach Cities Medical Reserve Corps
BLS	Basic Life Support; Bureau of Labor Statistics
BORSTAR	Border Patrol Search, Trauma, and Rescue
BUMED	(Navy) Bureau of Medicine and Surgery

C

CA ANG	California Air National Guard
CA ARNG	California Army National Guard
CA-TF2	California Task Force 2
Cal EMA	California Emergency Management Agency
Cal EMSA	California Emergency Medical Services Authority
CAL-MAT	California Medical Assistance Team
CAP	Capital Area Provider
Capt	Captain (USAF)

CAPT	Captain (USN, USPHS)
CASF	Contingency Aeromedical Staging Facility
CAT	Computerized Axial Tomography
CBP	Customs and Border Protection
CBRN	California Board of Registered Nursing; Chemical, Biological, Radiological, Nuclear
CCAT	Critical Care Air Transport Team
CCDR	Combatant Commander
CCQAS	Centralized Credentials and Quality Assurance System
CDC	Centers for Disease Control and Prevention
CDPH	California Department of Public Health
CDR	Commander (USN, USPHS)
CDSC	Contingency Dual Status Commander
CERFP-CBRN	Enhanced Response Force Package- Chemical, Biological, Radiological, Nuclear
CERT	Community Emergency Response Team
CHHS	California Health and Human Services Agency
CNG	California National Guard
COA	Course of Action
COCOM	Combatant Command
COMDTINST	(USCG) Commandant Instruction
CONOPS	Concept of Operations
CONPLAN	Operation Plan in Concept Form
CPT	Captain (Army Reserves)
CRAF	Civil Reserve Air Fleet
CS	Civil Support
CSH	Combat Support Hospital
CSMR	California State Military Reserve

D

DASF	Disaster Aeromedical Staging Facility
DCO	Defense Coordinating Officer
DCRF	Defense CBRN Response Force
DEMPS	Disaster Emergency Medical Personnel System
DHS	Department of Homeland Security
DHV	Disaster Healthcare Volunteers
DMAT-CA-9	Los Angeles based Disaster Medical Assistance Team
DMORT	Disaster Mortuary Operational Response Team
DO	Doctor of Osteopathy
DOC	Department Operations Center
DoD	Department of Defense
DoDD	Department of Defense Directive
DoDI	Department of Defense Instruction
DOS	Department of State
DOT	Department of Transportation

DPMU	Disaster Portal Morgue Unit
DRC	Disaster Resource Center
DRT	Disaster Response Team
DSCA	Defense Support of Civil Authorities
DSW	Disaster Service Worker

E

EDD	Employment Development Department
EEHE	Early Entry Hospital Element
EF-8	(State) Emergency Function #8
EMAC	Emergency Management Assistance Compact
EMEDS	Expeditionary Medical Support
EMEDS-HRT	Emergency Medical Support Health Response Team
EMF	Expeditionary Medical Facility
EMG	Emergency Management Group
EMR	Emergency Medical Responder
EMS	Emergency Medical Services
EMSA	Emergency Medical Services Authority
EMT	Emergency Medical Technician
ENA	Emergency Nurses Association
EOC	Emergency Operations Center
EOP	Executive Office of the President
EPRP	Emergency Preparedness and Response Program
ERC	Emergency Reserve Corps
ESAR VHP	Emergency System for Advance Registration of Volunteer Health Professionals
ESF	Emergency Support Function
ESF#1	Transportation
ESF#2	Communications
ESF#3	Public Works and Engineering
ESF#4	Firefighting
ESF#5	Emergency Management
ESF#6	Mass Care, Housing, and Human Services
ESF#7	Resource Support
ESF#8	Public Health and Medical Services
ESF#9	Urban Search and Rescue
ESF#10	Oil and Hazardous Materials
ESF#11	Agriculture and Natural Resources
ESF#12	Energy
ESF#14	Long-Term Community Recovery
ESF#15	External Affairs
EST	Emergency Service Team; Emergency Support Team
EXORD	Execute Order

F

FACT	Family Assistance Center Team
FCC	Federal Coordinating Center
FCO	Federal Coordinating Officer
FEMA	Federal Emergency Management Agency
FETIG	Federal Education and Training Interagency Group
FHP & R	Force Health Protection & Readiness
FM	Field Manual
FMS	Federal Medical Station
FOS	Federal Operation Support
FS	Flight Surgeon
FSRT	Fatal Search Recovery Team
FST	Forward Surgical Team

G

GPMRC	Global Patient Movement Requirements Center
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H

HA	Health Affairs
HAE	Hospital Augmentation Element
HD	Homeland Defense
HD&ASA	Homeland Defense and Americas' Security Affairs
H	Hour-specific time an operation or exercise begins
HHS	Department of Health and Human Services
HPP	Hospital Preparedness Program
HRF	Homeland Response Force
HRSA	Health Resources and Services Administration
HS	Homeland Security
HSPD	Homeland Security Presidential Directive
HSPD-21	HSPD Public Health and Medical Preparedness
HSS	Health Service Support
HST	Health Services Technician

I

ICE	Immigration and Customs Enforcement
ICS	Incident Command System
ICU	Intensive Care Unit
IGO	Intergovernmental Organization
IMSuRT	International Medical Surgical Response Team
IOC	Integrated Operations Center

IPR	In-progress review
ITV	In-transit visibility

J

J-3	Operations Directorate of the Joint Staff
JCS	Joint Chief of Staff
JDOMS	Joint Director of Military Support, Joint Staff (J34)
JFO	Joint Field Office
JPATS	Joint Patient Assessment & Tracking System
JPMT	Joint Patient Movement Team
JPRT	Joint Patient Reporting Team
JS	Joint Staff
JTF	Joint Task Force
JTF-CS	Joint Task Force-Civil Support

L

LAC	Los Angeles County (California)
LACoFD	Los Angeles County Fire Department
LAC DHV	Los Angeles County Disaster Healthcare Volunteers
LAC DHS	Los Angeles County Department of Health Services
LAC DPH	Los Angeles County Department of Public Health
LAC EMS Agency	Los Angeles County Emergency Medical Services Agency
LAC OA	Los Angeles County Operational Area
LB DHHS	Long Beach Department of Health and Human Services
LB MRC	Long Beach Medical Reserve Corps
LCDR	Lieutenant Commander (USN, USPHS)
LHA	Tarawa-Class Amphibious Assault Ship
LHD	Wasp-Class Amphibious Assault Ship
LPN	Licensed Practical Nurse
LtCol	Lieutenant Colonel (Air Force)
LVN	Licensed Vocational Nurse

M

MA	Mission Assignment
MAC	Medical Alert Center
Maj	Major (Air Force)
MASCAL	Mass Casualty
MASF	Mobile Aeromedical Staging Facility
MBC	Medical Board of California
MCDP	Marine Corps doctrinal publication
MD	Medical Doctor
ME/C	Medical Examiner or Coroner
MedBn	Medical Battalion

MEDCOM	(Army) Medical Command
MF	Mass Fatality
MFH	Mobile Field Hospital
MHT	Mental Health Team
MILDEP	Military Department
MMRS	Metropolitan Medical Response System
MMS	Medical Material Set
MPH	Masters of Public Health
MOE	Measure of Effectiveness
MOP	Measure of Performance
MOU	Memorandum of Understanding
MQA	Medical Quality Assurance
MRC	Medical Reserve Corps
MSC	Military Sealift Command
MST	Mission Support Team
MTF	Medical Treatment Facilities

N

NASEMSO	National Association of State EMS Officials
NCDMPH	National Center for Disaster Medicine and Public Health
NDMS	National Disaster Medical System
NDS	National Defense Strategy
NG	National Guard
NGB	National Guard Bureau
NGO	Nongovernmental Organization
NHTSA	National Highway Traffic Safety Administration
NIC	National Integration Center
NIMS	National Incident Management System
NINP	National Intelligence Needs Process
NIRT	Nuclear Incident Response Team
NIST	National Incident Support Team
NMCC	National Military Command Center
NMRT	National Medical Response Team
NMS	National Military Strategy
NORAD	North American Aerospace Defense Command
NP	Nurse Practitioner
NREMT	National Registry of Emergency Medical Technician
NRF	National Response Framework
NSC	National Security Council; National Standard Curricula
NSS	National Security Strategy
NVRT	National Veterinary Response Team

O

OA	Operational Area
OASD	Office of the Assistant Secretary of Defense
OEM	Office of Emergency Management
OCVMRC	Office of Civilian Volunteer Medical Reserve Corps
OHA	Office of Health Affairs
OMB	Office of Management and Budget
OR	Operation Room
OSD	Office of the Secretary of Defense

P

P&R	Personnel and Readiness
PA	Public Affairs; Physician Assistant
PAR	Population at Risk
PDD	Presidential Decision Directive
PHEV	Public Health Emergency Volunteer
PHP	Public Health Preparedness
PM SAT	Patient Movement Situational Awareness Team
PMR	Patient Movement Request
PPHD	Pasadena Public Health Department
PPD-8	Presidential Policy Directive 8 (Natural Preparedness)
PSMA	PreScripted Mission Assignment

R

RA	Reserve Affairs
RADM	Rear Admiral (Upper Half)
RC	Reserve Component
RDF	Rapid Deployment Forces
REC	Regional Emergency Coordinator
RETCO	Regional Emergency Transportation Coordinator
RETREP	Regional Emergency Transportation Representative
RFA	Request for Assistance
RFF	Request for Force
RIST	Regional Incident Support Team
RN	Registered Nurse

S

S&T	Science and Technology
SAD	State Active Duty
SAR	Search and Rescue
SAT	Service Access Teams

SC	Strategic Communication
SEMS	Standardized Emergency Management System
SDDC	(Army) Surface Deployment and Distribution Command
SecDef	Secretary of Defense
SEP	State Emergency Plan
SMRC	Special Medical Command (MEDCOM) Response Capabilities
SNS	Strategic National Stockpile
SOC	Secretary's Operations Center
START	Simple Triage and Rapid Treatment

T

T10	Title 10, United States Code
T32	Title 32, United States Code
T50	Title 50, United States Code
T-AH	Mercy-Class Hospital Ship
TA	Technical Assistant
TACC	Tanker Airlift Control Center
TIMA	Tzu Chi International Medical Association
TRAC2ES	(US) TRANSCOM Regulating and Command & Control Evacuation System
Tzu Chi	Buddhist Tzu Chi Foundation

U

US&R	Urban Search and Rescue
USAFR	United States Air Force Reserve
USAR	United States Army Reserve
USC	United States Code
USCG	United States Coast Guard
USD	Under Secretary of Defense
USG	United States Government
USGS	United States Geological Survey
USMCR	United States Marine Corps Reserve
USNORTHCOM	United States Northern Command
USNR	United States Navy Reserve
USPHS	United States Public Health Service
USTRANSCOM	United States Transportation Command
USUHS	Uniformed Services University of the Health Sciences

V

VA	Department of Veterans Affairs
VHA	Veterans Health Administration
VISN	Veteran Integrated Service Network
VistA	Veteran Health Information System and Technology Architecture

W

WMD Weapons of Mass Destruction

WMD-CST Weapons of Mass Destruction-Civil Support

EXECUTIVE SUMMARY

The National Center for Disaster Medicine and Public Health (NCDMPH), established in 2008 by Homeland Security Presidential Directive (HSPD) 21 (Public Health and Medical Preparedness) as an "academic center of excellence in disaster medicine and public health," prepared this report to describe selected aspects of the health professions workforce who would respond to a catastrophic domestic natural disaster. This report:

- Analyzes core Federal departments supporting Emergency Support Function #8 (ESF#8) –Public Health and Medical Services – of the National Response Framework.
- Examines three key occupational sub-groups first at the National level then the State (California) and local level (Los Angeles): (1) emergency and critical care physicians; (2) emergency and critical-care nurses; and (3) paramedics.
- Uses a pilot case study focusing on a theoretical major earthquake scenario in the southern California region to describe the anticipated local, State, and Federal ESF#8 workforce responding to the fictional earthquake with emphasis on the three core occupational sub-groups.
- Incorporates feedback from a multi-stakeholder conference.

This landscape analysis supports further development of necessary workforce disaster health competencies and the curricula helping to achieve those competencies. The understanding of the "who" of the workforce provides the skeleton for appending the "what" of competencies and standards and the "how" of curricula.

This report is created from the following efforts:

- A literature review was conducted to identify factors or issues that may affect the disaster health workforce.
- Federal plans and programs focusing on the disaster health workforce were identified.
- Semi-structured interviews were held with Federal informants and with stakeholders in Los Angeles County and California State.
- Data were identified for specified occupations at local, state, and national levels.
- A national conference was held to seek individual feedback on the case study methodology, selective findings, and thoughts on potential next steps.
- Three draft reports were released and coordinated for stakeholder review, comment, and fact-checking.

Key points from the Los Angeles County case study (major earthquake scenario) include:

Executive Summary

- The identified disaster health workforce is situated within local city and county government departments that provide medical and health related services, local disaster healthcare volunteer units, local government fire departments, hospitals, and community-based volunteer organizations.
- If Los Angeles County requires additional disaster emergency assistance, California State government can coordinate and organize additional workforce components for emergency management and health related services, as well as provide assistance from the California National Guard.

State authorities have primary responsibility for the *coordination* of all disaster response activities, while Federal participation only occurs when a State's resources have been exceeded or exhausted and a request for Federal support is made. The domestic disaster health workforce at the Federal level largely includes personnel from the Department of Health and Human Services, Department of Defense (provided on a not-to-conflict basis with national defense missions), Department of Veterans Affairs, Department of Homeland Security, and support from the Department of Transportation. Detailed descriptions of the workforce components identified in the case study of Los Angeles County and these five key Federal agencies are provided in the main section of this report.

A number of factors challenge accurate description of the disaster health workforce for a domestic natural disaster. The issue of willingness of health care personnel to respond in a disaster setting was identified in the literature review. Accurate counting of the disaster health workforce is hampered by the possibility the same responder may be on rosters of multiple organizations (double counting). Information about specialties within the disaster health workforce may not be readily available, which limits the ability to rapidly identify specialties required for the disaster health workforce, identify shortages by specific specialty, and ensure that personnel are being employed optimally given the specialties they may have. Day-to-day healthcare for the majority of the public is provided by the private sector, but disaster health response is primarily a government-driven public / private partnership, which does not provide a pre-planned, integrated situational awareness, or resource management capability for workforce composition.

The NCDMPH makes the following fourteen recommendations:

- *Recommendation #1:* Further study of the actual versus the perceived impact of double counting of responders, to include any differentiation between paid commitment and unpaid.
- *Recommendation #2:* Conduct research on how double counting affects, if at all, workforce preparedness and response.
- *Recommendation #3:* Investigation of whether there is benefit to developing a more formal mechanism, beyond self-reporting, for identifying multiple affiliations of responders, and, if so, should the information collected include data fields such as specialization and paid / unpaid status?

Executive Summary

To address concerns about volunteer failure to respond:

- *Recommendation #4:* Processes and procedures to provide care for the volunteer's families while deployed during a domestic disaster response.
- *Recommendation #5:* Training, team building, and communications to keep volunteers connected to their volunteer organizations over time.

The impact of an aging medical workforce along with the increasing demand for services from an aging general population will impact the available capabilities of the medical and public health systems to meet and respond to the needs of populations impacted by natural disasters.

- *Recommendation #6:* Response plans should assume fewer numbers of available clinical specialists, especially highly trained, sub-specialty clinicians, and consider processes to provide the right knowledge, to the right person, at the point of need, but all within the chaotic context of a disaster response.
- *Recommendation #7:* Consider options to compensate for a diminished health workforce, to include increased responsibilities and diversification among other elements and levels of the workforce through enhancements to existing training and education programs, including cross-training.
- *Recommendation #8:* Identify competencies currently performed by physicians that can be performed by other elements of the health workforce, such as, but not limited to, physician assistants, nurses, or emergency medical services personnel, as well as those performed by nurses, certified nursing aides, and other workforce personnel (e.g., respiratory therapists, etc.)

The lack of an intentional human capital development program across the disaster health workforce was noted both vertically (i.e., Federal, State, and local government as well as the private sector) and horizontally (i.e., among Federal agencies). Such an effort should be considered as co-equal to effective national planning. Currently, each major agency and component conducts its own training and education programs and, while there frequently are interagency / multi-level components to exercises and other training events, these exercises are "process" focused on exercise plans and operational procedures. The workforce competency-related training aspects of these events are usually unstated, undocumented, and not evaluated.

- *Recommendation #9:* Establish an integrated workforce training and education baseline addressing validated competencies and standards from all levels of the disaster health community. This should support and be synergistic with all planning efforts.

In the production of this report, no central requirement, capability, or effort was identified that focused on how to track the availability and readiness of the disaster health workforce below the team or unit level. Such tracking could facilitate decisions regarding unit employment in response to a disaster.

Executive Summary

- *Recommendation #10:* As the ESF#8 Coordinator, recommend the Department of Health and Human Services (HHS) should consider establishing a process among the various components of the disaster health workforce, to include the private sector, to provide real-time information sharing of personnel asset visibility (e.g., available number, specialty, and location). This information could be used in conjunction with other data to identify possible or actual personnel shortages, enable by-specialty reallocation / reassignment of available personnel, and identify workforce personnel who might require on-site training.
- *Recommendation #11:* Recommend HHS consider establishing a periodic reporting requirement for designated specialties, in order to provide an updated national snapshot of the available ESF#8 disaster health workforce that could be used to assist with workforce development and education initiatives. (This would require the participation of State and local governments, private sector healthcare providers, and the appropriate certifying organizations.)

No consistent methodology for capturing and specifying organizational readiness was observed across ESF#8 outside of HHS' Emergency Response Tiers for U.S. Public Health Service officers and DoD readiness categories. Visibility of organizational readiness for deployment / employment is largely ad hoc, which may not be sustainable in a resource constrained environment, and may also impose a psychological burden on personnel which could decrease effectiveness.

- *Recommendation #12:* Establish a longitudinal cycle of readiness levels across ESF#8 (e.g., "immediately available," "ready in 48 hours," "ready in 96 hours," etc.).

Although somewhat outside the scope of this report, we observed that capabilities are provided to requesting entities (usually Federal to local) in whole-unit blocks, even when the local responders only need a subset of that block.

- *Recommendation #13:* In addition to forming and training for response as an entire unit, recommend medical response teams examine the various potential sub-units they would be able to organize and deploy in order to meet requirements from supported local authorities for capabilities contained within, but less than 100% of their structure.

For updating and expanding the Disaster Health Workforce Report:

- *Recommendation #14:* The ESF#8 Coordinator (HHS), in consultation with the National Security Staff, Federal Interagency, State, and local stakeholders should recommend an appropriate cycle for updating this report in its entirety or in part. This updating could consider different disaster types (such as a CBRN disaster), conducting additional case studies in different locales, and could focus on different national strategies and plans, such as the human capital implications of the recently released National Disaster Recovery Framework. Consistent with input at the national conference, the NCDMPH recommends a three-year periodicity for updating the entire report. As supported by the Federal Education and Training Interagency Group in October 2011, the NCDMPH will conduct 1-2 additional Case Studies in different locales during FY12.

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As with any such endeavor, this report has a number of limitations. This report is limited to a descriptive analysis of the disaster health workforce and does not attempt to address functional capabilities, tracking, volunteer recruitment and retention, or other challenges (e.g., funding) faced by the disaster health response community. Los Angeles County has unique features such as a mature well-established disaster response workforce, high population density, and large geographic area. Because of these features and the cross-sectional nature of the study, the findings of the case study are not generalizable to other regions or cities. The scope of this report was deliberately focused on a natural disaster. The information contained within will become progressively outdated due to changes in organizational structure and revisions to response plans.

The NCDMPH believes the information contained in the report is a valuable addition to the disaster health workforce knowledge base. The extensive literature review and stakeholder engagement have indicated this is a first-ever effort at articulating the disaster health workforce in such a broad scope using multiple methods. A reasonably clear structure of the disaster health workforce has emerged. This will inform the NCDMPH's efforts to establish competencies, standards, and curricula for this workforce in order to enhance National all-hazards preparedness, response, and recovery. The understanding of the "who" of the workforce provides the skeleton for appending the "what" of competencies and standards and the "how" of curricula. Additionally, this informs the NCDMPH's Federal partners as they seek to develop supporting policies, plans, programs, and exercises.

ACKNOWLEDGEMENTS

The authors of this report wish to express their deepest gratitude and warmest appreciation to the following individuals, who have contributed their substantial expertise to this report.

Lucy Adams (LAC EMSA)
CAPT Don Albia (USTRANSCOM/SG)
Eric Allely, MD (NGB/JSG)
Stephen Allen (ASPR/NDMS)
LT Clemia Anderson (USNORTHCOM/JRMP-NE)
Evie Anguiano (LACoFD)
CAPT Brad Austin (HHS/OCVMRC)
CAPT Dan Beck (HHS/USPHS)
Louise Bloomfield (Pomona Valley Hospital Medical Center)
Debra Boudreaux (Buddhist Tzu Chi Foundation)
Bernice Boursiquot (DOT/NHTSA)
Pete Brewster (DVA/EMSHG)
Diane Brown (LB DHHS)
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Anthony De La Rosa (Monterey Park Hospital)
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Anna Dermenchyan (RN/AACN)
James Eads (LAC DHS/LAC EMS Agency)
Margie Elmi (AACN)
James Engstrand (NGB/JSG)
Heidi Erb (NREMT)
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Jennifer Hannah (HHS/ESAR-VHP)
Brandy Harkins (BCHD)
Sebastian Heath (DHS/FEMA)
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INTRODUCTION

Purpose

The National Center for Disaster Medicine and Public Health (NCDMPH or the National Center) prepared this report with funding from the Department of Health and Human Services / Assistant Secretary for Preparedness and Response (HHS / ASPR) to describe selected aspects of the health professions workforce who would respond to a domestic natural disaster of sufficient impact or magnitude that it results in a Presidential Disaster Declaration. This report:

- Analyzes core Federal departments supporting Emergency Support Function #8 (ESF#8)-Public Health and Medical Services of the National Response Framework (NRF).
- Examines three key occupational sub-groups first at the National level then to the State and local level within the case study. These healthcare occupational sub-groups include:
 - (1) emergency and critical care physicians; (2) emergency and critical-care nurses; and (3) paramedics. This report enumerates their numbers and addresses expectations of their response.
- Uses a pilot case study focusing on a theoretical major earthquake scenario in the southern California region to describe the anticipated local, State, and Federal ESF#8 workforce responding to the fictional earthquake with emphasis on the three core occupational sub-groups.
- Incorporates feedback from a multi-stakeholder conference.

Completed in support of an interagency-approved NCDMPH strategic plan and consistent with the National Center's mission, this landscape analysis of selected aspects of the health profession's workforce responding to a natural disaster supports further development of necessary workforce disaster health competencies and the curricula helping to achieve those competencies. Workforce, competence, and curricula are central to enhancing the nation's disaster preparedness and response.

Background

The National Center was established in 2008 by Homeland Security Presidential Directive (HSPD) 21, "Public Health and Medical Preparedness", as an "academic center of excellence in disaster medicine and public health."^[1] The National Center functions under a charter from the Department of Defense (DoD) and the Uniformed Services University of the Health Sciences (USUHS).^[2] Guidance is provided by the Federal Education and Training Interagency Group for Public Health and Medical Disaster Preparedness and Response (FETIG), an advisory group to the National Center with core Federal representation from:^[3]

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- Department of Health and Human Services (HHS)
- Department of Defense (DoD)
- Department of Veterans Affairs (VA)
- Department of Homeland Security (DHS)
- Department of Transportation (DOT)

The National Center is housed by USUHS and pursues a mission derived from HSPD-21: "Leads Federal and coordinates national efforts to develop and propagate core curricula, education, training, and research in all-hazards disaster health." This is accomplished by working *across* Federal departments (the "Interagency"), *with* State and local governments, and *among* professional associations and academia.

As a Presidentially-created organization within the only U.S. federal health sciences university, the National Center is uniquely authorized to communicate and coordinate a national disaster health learning strategy, not only within the Federal government, but also with State, local, and tribal entities, as well as academia and the private sector. Gaining an appreciation for the workforce informed by a disaster health learning strategy is central to this project and directly supports Strategic Objective #2 of the National Health Security Strategy: "Develop and maintain the workforce needed for national health security."^[4]

Overview of Federal Disaster Response

The recently released Presidential Policy Directive 8 (National Preparedness) specifically states that all of HSPD-21 is retained and remains in effect while further stating: "Our national preparedness is the shared responsibility of all levels of government, the private and nonprofit sectors, and individual citizens."^[6] PPD-8 defines the requirement to develop a national preparedness goal that "identifies the core capabilities necessary for preparedness," and establishes a National Preparedness System as an integrated set of guidance, programs, and processes enabling the Nation to achieve the national preparedness goal. It further states:

"The national preparedness system shall include a series of integrated national planning frameworks, covering prevention, protection, mitigation, response, and recovery. The frameworks shall be built upon scalable, flexible, and adaptable coordinating structures to align key roles and responsibilities to deliver the necessary capabilities. The frameworks shall be coordinated under a unified system with a common terminology and approach, built around basic plans that support the all-hazards approach to preparedness and functional or incident annexes to describe any unique requirements for particular threats or scenarios, as needed. Each framework shall describe how actions taken in the framework are coordinated with relevant actions described in the other frameworks across the preparedness spectrum..."

"...Each national planning framework shall include guidance to support corresponding planning for State, local, tribal, and territorial governments. The national preparedness system shall include resource guidance, such as arrangements enabling the ability to share personnel. It shall provide equipment guidance aimed at nationwide interoperability *and shall provide guidance for national training and*

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exercise programs (*italics added for emphasis*), to facilitate our ability to build and sustain the capabilities defined in the national preparedness goal and evaluate progress toward meeting the goal."

State authorities have primary responsibility for the coordination of all disaster response activities, while Federal participation occurs when a State has exceeded or exhausted its resources and requests Federal support. When this occurs, the U.S. Code, the compiled and codified general and permanent Federal laws of the United States, provides three sources of Federal response:

- Title 42, specifically the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288, known as the Stafford Act), is normally the defining statutory authority for Federal disaster response.
- Title 31, specifically Section 1553 of Chapter 15, the "Economy Act" (as amended), authorizes Federal agencies to provide fully reimbursable services to other Federal organizations that request them. The Economy Act allows support from one Federal agency to another in the absence of a Stafford Act Presidential Disaster Declaration.
- Title 50, specifically Chapter 34, authorizes a Presidentially-declared "National Emergency," in response to events such as the 11 September 2001 attack on the United States. This declaration is normally promulgated by Executive Order or Presidential Proclamation.

A Presidentially-declared Title 50 national emergency and a Presidentially-declared disaster under the Stafford Act are distinct and separate declarations. The Stafford Act authorizes the President to provide financial and other assistance to State and local governments, certain private nonprofit organizations, and individuals to support response, recovery, and mitigation efforts following Presidential emergency or major disaster declarations under the act. A Title 50 "National Emergency" allows the President to invoke particular emergency authorities as needed when the Federal response to an event is anticipated to exceed that allowable under the Stafford Act.^[7] Figure Intro-1: Levels of Emergency Response below provides a depiction of the sequence of events by which an incident is elevated from the local to the State level and the subsequent actions taken prior to and following a Presidential Declaration, which could invoke the Stafford Act (or Title 50, depending on the type of incident and anticipated level of Federal response).

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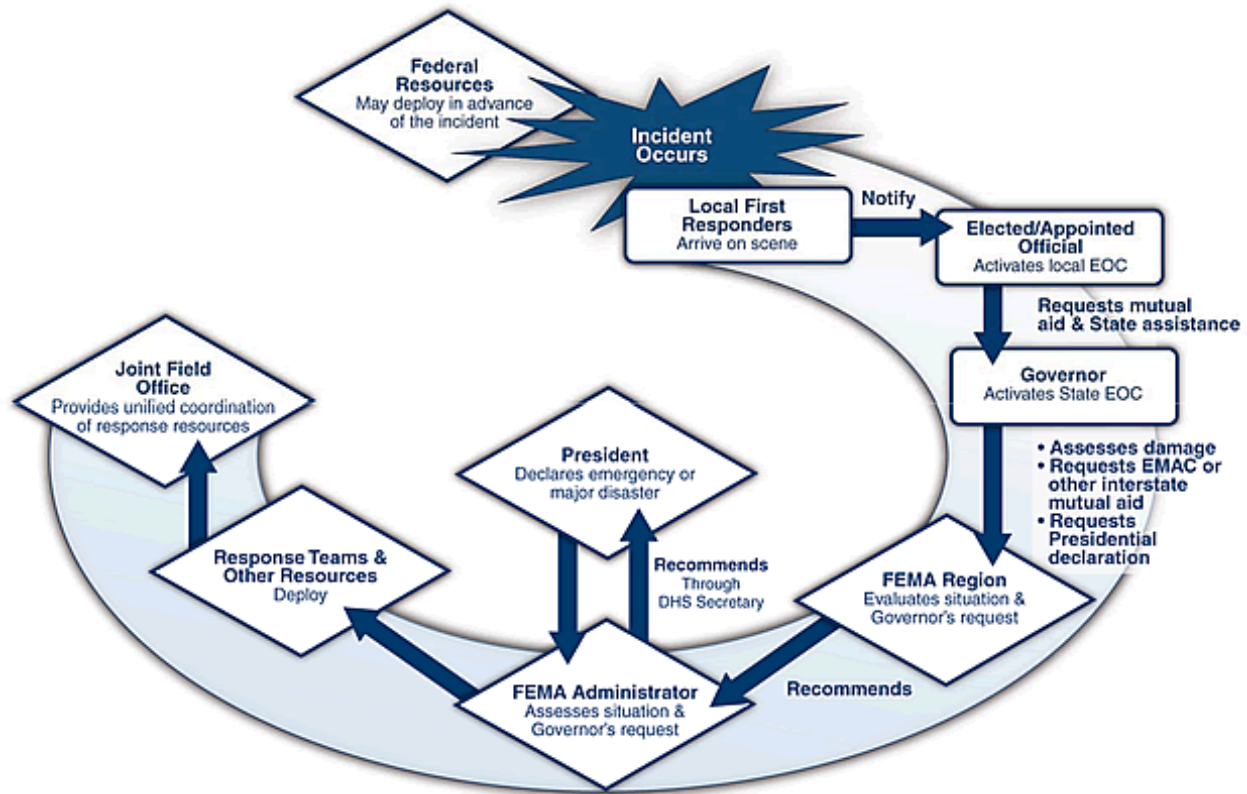


Figure-1: Levels of Emergency Response

Source:

^a Federal Emergency Management Agency. "Overview of Stafford Act Support to States" [Internet]. 2011 [cited 2011 Oct]. Available from: <http://www.fema.gov/pdf/emergency/nrf/nrf-stafford.pdf>,

The current framework for implementation of the nation's preparedness effort at the Federal level is the National Response Framework (NRF) which provides the foundation for domestic disaster response.^[8] The main goal of the NRF is to present "the guiding principles that enable all response partners to prepare for and provide a unified national response to disasters and emergencies—from the smallest incident to the largest catastrophe. The NRF establishes a comprehensive, national, all-hazards approach to domestic incident response."

The NRF identifies 15 specific Emergency Support Functions (ESFs) which form the primary mechanism by which Federal Interagency assistance is provided to State, local, tribal, or territorial governments in response to a disaster, emergency, or other national-level event.^[9] ESFs are used at all levels of government to organize and provide disaster assistance. The ESFs are listed in Table-1 & 2: Emergency Support Functions Descriptions.

Table-1: Emergency Support Functions Descriptions 1-2	
Emergency Support Function	Scope
ESF #1 – Transportation	<ul style="list-style-type: none"> • Aviation/airspace management • Transportation safety • Restoration/recovery of transportation infrastructure • Movement restrictions • Damage and impact assessment
ESF #2 – Communications	<ul style="list-style-type: none"> • Coordination with telecommunication industry • Restoration/repair of telecommunications infrastructure • Protection, restoration, and sustainment of national cyberspace and information technology resources
ESF #3 – Public Works and Engineering	<ul style="list-style-type: none"> • Infrastructure protection and emergency repair • Infrastructure restoration • Engineering services, construction management • Critical infrastructure liaison
ESF #4 – Firefighting	<ul style="list-style-type: none"> • Firefighting activities on Federal lands • Resource support to rural and urban firefighting operations
ESF #5 – Emergency Management	<ul style="list-style-type: none"> • Coordination of incident management efforts • Issuance of mission assignments • Resource and human capital • Incident action planning • Financial management
ESF #6 – Mass Care, Housing, and Human Services	<ul style="list-style-type: none"> • Mass care • Disaster housing • Human services
ESF #7 – Resource Support	<ul style="list-style-type: none"> • Resource support (facility space, office equipment and supplies, contracting services, etc.)
ESF #8 – Public Health and Medical Services	<ul style="list-style-type: none"> • Public health • Medical • Mental health services • Mass fatality management
ESF #9 – Urban Search and Rescue	<ul style="list-style-type: none"> • Life-saving assistance • Urban search and rescue
ESF #10 – Oil and Hazardous Materials Response	<ul style="list-style-type: none"> • Environmental safety and short-and long-term cleanup

Adapted from:

^b U.S. Department of Homeland Security. Federal Emergency Management Agency. Emergency Support Function Annexes: Introduction [Internet]. 2008 Jan [cited 2011 Oct]. Available from: <http://www.fema.gov/pdf/emergency/nrf/nrf-esf-intro.pdf>

Table-2: Emergency Support Functions Descriptions 2-2

ESF #11 – Agriculture and Natural Resources	<ul style="list-style-type: none"> • Nutrition assistance • Animal and plant disease/pest response • Food safety and security • Natural and cultural resources and historic properties protection and restoration
ESF#12-Energy	<ul style="list-style-type: none"> • Energy infrastructure assessment, repair, and restoration • Energy industry utilities coordination • Energy forecast
ESF#14-Long-Term Community Recovery	<ul style="list-style-type: none"> • Social and economic community impact assessment • Long-term community recovery assistance to States, local governments, and the private sector • Mitigation analysis and program implementation
ESF #15 – External Affairs	<ul style="list-style-type: none"> • Emergency public information and protective action guidance • Media and community relations • Congressional and international affairs • Tribal and insular affairs

Adapted from:

^b U.S. Department of Homeland Security. Federal Emergency Management Agency. Emergency Support Function Annexes: Introduction [Internet]. 2008 Jan [cited 2011 Oct]. Available from: <http://www.fema.gov/pdf/emergency/nrf/nrf-esf-intro.pdf>

Each ESF is executed by an interagency partnership consisting of:

- One Federal department designated as the ESF Coordinator, responsible for management oversight for that ESF.
- One or more Primary Agencies who have significant authorities, roles, resources, or capabilities for a particular function within that ESF. In most cases, the ESF Coordinator is also a Primary Agency (sometimes the only Primary Agency). For the purposes of this report, the term "Primary Agency" will be considered synonymous with the term "Lead Federal Agency."
- One or more Supporting Agencies having specific capabilities or resources that support a Primary Agency.

As noted earlier, this report will focus on ESF#8- Public Health and Medical Services.

The NRF, which provides the structure and means for national-level incident management policy and procedure, is implemented through the National Incident Management System (NIMS), which provides the hierarchical and role-based template for the incident response.^[10] Within NIMS, the Incident Command System (ICS) provides a standardized, on-scene, all-hazards incident management approach that:

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- Allows for the integration of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure.
- Enables a coordinated response among various jurisdictions and functional agencies, both public and private.
- Establishes common processes for planning and managing resources.

ICS is flexible and can be used for incidents of any type, scope, and complexity. ICS allows its users to adopt an integrated organizational structure to match the complexities and demands of single or multiple incidents.^[11] ICS is used by all levels of government as well as by many nongovernmental organizations and the private sector. It is applicable across disciplines and is typically structured to facilitate activities in five major functional areas, as depicted in Figure-2: Incident Command Structure, based on the incident needs. (A sixth area, Intelligence / Investigations, can also be activated on a case-by-case basis.)

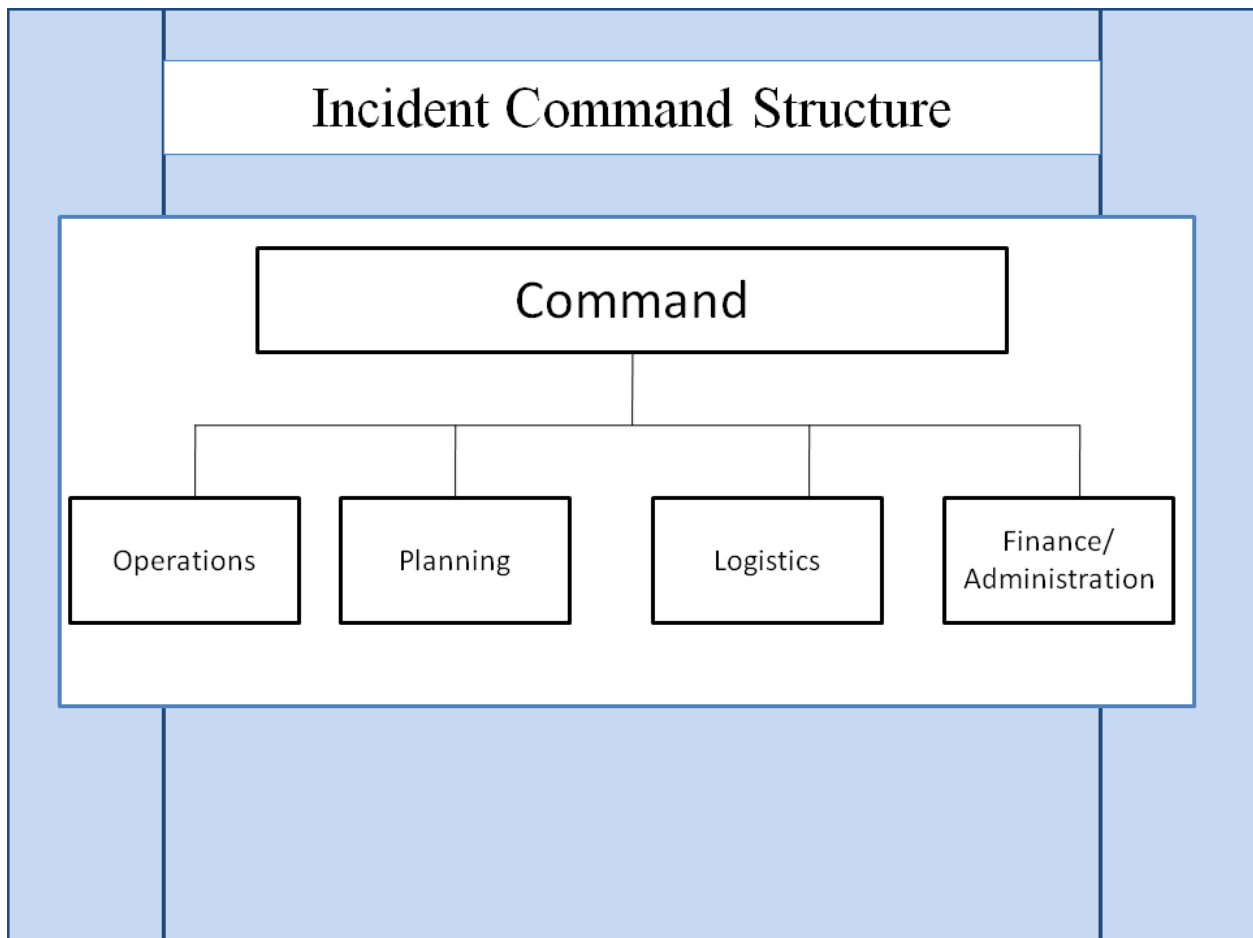


Figure-2: Incident Command Structure

Adapted from:

^c U.S. Department of Homeland Security. Incident Command System (ICS) [Internet]. 2011 [cited 2011 Oct]. Available from: <http://www.fema.gov/emergency/nims/IncidentCommandSystem.shtm>

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The report focuses on ESF#8-Public Health and Medical Services, which addresses the Federal public health and medical response to an emergency or major disaster. ESF#8 outlines the coordinated, interagency assistance mechanism that supplements State, local, tribal, or territorial public health and medical resources when a coordinated Federal response is required. ESF#8 works in collaboration with the States and other public and private entities to provide health and human services during federally declared disasters and public health emergencies for limited periods of time. This includes responding to the medical needs associated with mental health, behavioral health, and substance abuse issues of incident victims and response workers as well as members of the population who may have medical and other functional needs before, during, and after an incident. It also covers the medical needs of members of the "at risk" or "special needs" population.^[12] (The ESF#8 Annex of the NRF, is attached as Appendix A to this report.)

The ESF#8 Annex identifies HHS as the ESF Coordinator and sole Primary Agency responsible for the execution of ESF#8 activities supported by the DoD, VA, DHS, DOT, and twelve other support agencies.^[12] Note also, the ESF#8 Primary Agency (HHS) also manages the following two major response components critical to ESF#8 success:

- The National Disaster Medical System (NDMS), a Federally-coordinated consortium of four departments (HHS, DoD, VA, and DHS) tasked to support ESF#8-Public Health and Medical Response operations through:
 - Providing emergency medical care support through a number of the HHS deployable medical specialized teams.
 - DoD medical evacuation of patients from an aerial port of embarkation near the disaster to NDMS-definitive medical care hospitals.
 - Providing patient reception and care through a network of DoD / VA medical treatment facilities (MTFs) known as Federal Coordinating Centers (FCCs) and participating civilian NDMS member hospitals, respectively.^[13]
- Federal Medical Stations (FMS) designed to deliver large-scale primary healthcare and related support services anywhere in the U.S. to include sub-acute, non-surgical inpatient care, special medical needs sheltering, and quarantine support in an existing facility such as a convention center. The FMS is a scalable surge capability designed to respond to a shortfall in all-hazard mass casualty care. A standard FMS consists of 250 cots (beds), scalable in 50-bed increments. Each FMS requires a three-day supply of medical and pharmaceutical resources as well as a staff of approximately 100 personnel. While an FMS is primarily intended to be staffed by the U.S. Public Health Service, personnel augmentation can also be requested. Currently, there are 65 deployable FMS sets throughout the U.S.^[14] (NDMS and FMS will be addressed in more detail in the HHS section of this report.)

DoD ESF#8 resource support can involve medical personnel, equipment, and supplies in the absence of other national-level resources or capabilities. More specifically, DoD support can include:

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- Providing support for the evacuation of patients and medically needy populations to locations where hospital care or outpatient services are available.
- Evacuating and managing victims / patients from a patient collection point in or near the incident site to NDMS patient reception areas using available DoD transportation resources, in coordination with the NDMS Medical Interagency Coordination Group.
- Providing available medical personnel for casualty clearing / staging, aeromedical evacuation, and other missions as needed, and mobilizing and deploying available Reserve and National Guard medical units when authorized and necessary.
- Coordinating patient reception, tracking, and management to nearby NDMS hospitals, VA hospitals, and DoD MTFs that are available and can provide appropriate care.
- Providing available military medical and veterinary personnel to assist in the protection of public health (such as food, water, wastewater, solid waste disposal, vectors, hygiene, and other environmental conditions) and care of animals.

It is important to note that DoD support to domestic disaster response is provided on a not-to-conflict basis with DoD's national defense missions.

In addition to its NDMS role, the VA can be tasked to provide hospital bed space in VA facilities and may deploy volunteers to provide direct care and evacuation support through the Disaster Emergency Medical Personnel System (DEMPS) program of the Veterans Health Administration. This tasking is subject to the availability of resources, funding, and consistency with its mission to give veterans priority service during a disaster.

DHS acts as an umbrella department under which agencies such as the Federal Emergency Management Agency (FEMA) and U.S. Coast Guard function as ESF#8 Support Agencies (e.g., FEMA provides emergency operational and logistical assistance as well as providing the overall NIMS/ICS-based incident management structure for the Federal-level response, while the Coast Guard assists other DHS organizations in international quarantine enforcement).

Within DOT, the National Highway Traffic Safety Administration's (NHTSA's) Office of Emergency Medical Services provides leadership and coordination to the EMS community in assessing, planning, developing, and promoting comprehensive, evidence-based emergency medical services and 911 systems. NHTSA, in conjunction with the HHS, supports the development of the national EMS education system for emergency medical services personnel (i.e., emergency medical technicians [EMTs] and paramedics). Additionally, as the ESF#1 Coordinator, DOT performs three specific functions that provide transportation-related support to ESF#8 operations: providing a common operating picture of the transportation systems and infrastructure reflecting real-time status and damage reports; identifying alternative transportation solutions in partnership with private sector partners; and, performing regulatory activities under its own direct authority relating to aviation, maritime, surface, railroad and pipeline transportation.

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After a brief review of methods employed in information collection, the report presents the results of the occupational group analysis and to emphasize the centrality of the local and state workforce to domestic disaster response, the southern California case study is provided. This is followed by a comprehensive Federal section covering HHS, DoD, VA, DHS, and DOT from a workforce perspective. A summary of the national conference leads to a discussion addressing cross-cutting disaster health workforce issues with a summary of report contributions and limitations. Based upon report content, summary recommendations and next steps are provided.

References

- [1] Homeland Security Presidential Directive 21: Public Health and Medical Preparedness [Internet]. 2009 Aug 18 (cited 2011 Oct 18). Available from: http://www.dhs.gov/xabout/laws/gc_1219263961449.shtm
- [2] National Center for Disaster Medicine and Public Health Charter; 2008.
- [3] Federal Education and Training Interagency Group for Public Health and Medical Disaster Preparedness and Response Charter; 2008.
- [4] U.S. Department of Homeland Security. National Health Security Strategy [Internet]. 2009 Dec [updated 2011 Apr 25; cited 2011 Oct]. Available from: <http://www.phe.gov/Preparedness/planning/authority/nhss/Pages/default.aspx>
- [5] U.S. Department of Health and Human Services. Pandemic and All-Hazards Preparedness Act (Public Law 109-417) [Internet]. 2010 Aug 11 [cited 2011 Oct]. Available from: <http://www.phe.gov/preparedness/legal/pahpa/pages/default.aspx>
- [6] Executive Office of the President. Presidential Policy Directive / PPD-8: National Preparedness [Internet]. 2011 Mar 30 [updated 2011 Apr 8; cited 2011 Oct]. Available from: http://www.dhs.gov/xabout/laws/gc_1215444247124.shtm
- [7] U.S. Government Printing Office. U.S. Code website [Internet]. 2008 July 7 [cited 2011 Oct]. Available from: <http://www.gpoaccess.gov/uscode/browse.html>
- [8] U.S. Department of Homeland Security. Federal Emergency Management Agency. National Response Framework [Internet]. 2011 [cited 2011 Oct]. Available from: <http://www.fema.gov/emergency/nrf/aboutNRF.htm>
- [9] U.S. Department of Homeland Security. Federal Emergency Management Agency. Overview: ESF and support annexes coordinating federal assistance in support of the National Response Framework [Internet]. 2008 Jan [cited 2011 Oct]. 68 p. Available from: <http://www.fema.gov/pdf/emergency/nrf/nrf-overview.pdf>

Introduction

[10] U.S. Department of Homeland Security. National Incident Management System Resource Center website [Internet]. 2011 [cited 2011 Oct]. Available from: <http://www.fema.gov/emergency/nims/>

[11] U.S. Department of Homeland Security. Incident Command System (ICS) [Internet]. 2011 [cited 2011 Oct]. Available from: <http://www.fema.gov/emergency/nims/IncidentCommandSystem.shtm>

[12] U.S. Department of Homeland Security. Emergency Support Function #8-Public Health and Medical Services Annexes [Internet]. 2008 Jan [cited 2011 Oct]. 16 p. Available from: <http://www.fema.gov/pdf/emergency/nrf/nrf-esf-08.pdf>

[13] U.S National Disaster Medical System website [Internet]. 2011 Nov 18 [cited 2011 Oct]. Available from: <http://www.phe.gov/preparedness/responders/ndms/Pages/default.aspx>

[14] U.S. Department of Health and Human Services. Medical Assistance [Internet]. 2011 Mar 27 [cited 2011 Oct]. Available from: <http://www.phe.gov/Preparedness/support/medicalassistance/Pages/default.aspx#fms>

METHODOLOGY

This study was conducted from October 2010 through October 2011 beginning with a structured literature review to identify factors or issues that may affect the disaster health workforce. Searches of the bibliographic databases MEDLINE and Scopus™, and an internet search for government reports were limited to the period 2001 to 2010. This time period was chosen to ensure capture of current and relevant findings and methodologies. Structured search terms were entered into the databases to identify relevant resources: domestic disaster response; natural disaster response; medical response; workforce; medical workforce; emergency and critical care physicians; emergency and critical-care nurses; and paramedics. Additionally, specific disaster-related terms were used for the review: National Disaster Medical System (NDMS); Disaster Medical Assistance Team (DMAT); and Medical Reserve Corps (MRC). References for all databases were reviewed to ensure they were within scope (described below), in English, and reflected issues related to the United States. Documents were selected for inclusion in the bibliography if they conformed to more than one of the following:

- Descriptive of the disaster response workforce
- Related to experiences of the workforce
- Related to key elements of medical surge capacity
- Increased knowledge about disaster-related issues associated with a health profession
- Addressed unique medical issues or populations associated with disasters

Second, analysis of Federal plans and programs focusing on the disaster health workforce was conducted. In addition to publicly available information, data was updated and corroborated through key informants, who were initially identified by the HHS Office of the Assistant Secretary for Preparedness and Response (primary Department for ESF #8), or through an ESF#8 supporting department contact and subsequent snowball (i.e., secondary referral) sampling. Additional contacts were identified by informant referral. Federal informants were contacted and interviewed using semi-structured interview questions (as show in Appendix B) to ensure essential information was consistently obtained. Follow-up information from informants was typically communicated to the study team by e-mail. Information pertinent to Federal Departments or Agencies was subsequently sent to key informants at least two to three times for their verification and validation. With each draft version of this report or its sub-sections, Departments or Agencies were subsequently sent updated files two to three times for their verification and validation. This feedback process was intended to enhance the accuracy of the report. However, it should be noted that only U.S. Coast Guard (USCG) information within the Department of Homeland Security (DHS) benefited from detailed departmental review. Unfortunately, the National Center was never able to establish a feedback review loop with the DHS Office of Health Affairs despite multiple phone calls and contacts. Thus, the information in the DHS section should be viewed cautiously, with the exception of the validated USCG data.

Third, a case study focusing on a theoretical major earthquake scenario in the southern California region was conducted to identify the anticipated combined Federal, State, and local ESF#8 response health workforce. This workforce was further limited, for practical reasons, to three

Methodology

occupational groups: emergency and critical care physicians / nurses, and paramedics. Key California-based informants belonging to State and local (Los Angeles County area) health agencies, hospitals, and systems were identified, as well as associated NDMS and MRC team members through contact referral. In-person State and local interviews were conducted. Telephone interviews were used for follow-up or to speak with individuals unavailable for in-person interviews. The southern California area was selected due to an existing earthquake disaster response framework, allowing the case study to articulate the already identified workforce supporting the response framework.

Fourth, an occupational group data analysis was conducted featuring the national data for the selected professions and then was extended to the state and local level (specifically southern California). This occupational analysis attempts to provide a quantitative perspective to the overall disaster health workforce analysis.

Fifth, once a "near final" draft of the workforce report was ready, absent the Discussion and Recommendations sections, the NCDMPH held a national conference in October 2011 comprised of a broad cross-section of stakeholders. This meeting sought feedback on cross-cutting themes, case study methodology, and potential next steps in addition to offering attendees another avenue for detailed feedback to the draft report. The output from this conference largely informed the Discussion and Recommendations sections of the report. Interestingly, feedback obtained during this conference also shaped the structure of the final report.

These five steps, always built on a foundation of collaboration and transparency, were used to create the final version of the report as it seeks to characterize the disaster health workforce landscape for a catastrophic natural disaster. Aspects of this report were intentionally constrained for practical as well as technical reasons – disaster health workforce occupations were targeted to a focused sample of reasonably specific specialties which are at the forefront of a disaster response, and the case study serves as the lens to the local and State workforce, providing a proof of concept.

OCCUPATIONAL GROUP ANALYSIS

Introduction

A November 2011 article in *Academic Medicine* cites references from the Association of Medical Colleges and Council on Physician and Nurse Supply forecasting a shortage of 100,000 physicians and up to one million nurses in the next ten years. The article estimates a requirement to increase medical school output by 100% over the next four years, coupled with a 100% increase in nursing school graduates over the next 13 years. The author then asks whether all of the tasks doctors and nurses currently perform could be done by others, such as generalist physicians performing tasks currently done by specialists, nurses performing tasks currently done by physicians, and even some tasks being performed by "well-trained lay workers" (referred to as "Grand-Aides" in a program currently being tested in eight states.) The author further suggests enhanced education for the general public (i.e., the patient population) in order to provide incentive for healthy behavior.^[1]

While this article is instructive and worth considering for day-to-day patient care, it does not address the unique set of circumstances that disasters create. These usually include unexpected or short-notice surge in patients, possibly in large numbers, presented with symptoms or conditions requiring care best provided by three occupational groups of healthcare providers: physicians, nurses, and emergency medical services (EMS) personnel. From these three groups, this section provides a summary of the five specialties identified in this project's tasking for enumeration in this report:

- Emergency Physicians
- Critical Care Physicians
- Emergency Nurses
- Critical-Care Nurses
- Paramedics

Each of these specialties will be enumerated at the national, State (California), and Los Angeles County level in order to provide a baseline specialist population comparison that supports the Case Study section of this report.

Sources

Research for this section confirmed there is no one consolidated data repository. Even within each occupational group (i.e., physicians, nurses, and EMS personnel) information was not immediately available from any one source for all three levels. The following organizations were contacted and their websites used to obtain information:

- Physicians (Both specialties)

Occupational Group Analysis

- American Board of Medical Specialties (ABMS), which incorporates data provided from:
 - American Board of Emergency Medicine (ABEM)
 - American Board of Internal Medicine (ABIM) (for Critical Care)

While totals for both specialties at national and State level were readily obtained, identifying the same information for these specialists in Los Angeles County required detailed coordination as the "Certification Matters" function of the ABMS website requires identification of city / ZIP Code / state and, while a county-level search is possible, it requires an off-line database query based on identification of all ZIP Codes in the county to be searched. Additionally, a state-level public search is currently limited to 200 responses.

- Medical Board of California (MBC), which provided the following disclaimer: "All information provided by the Medical Board of California is made available to provide immediate access for the convenience of interested persons. While the Board believes the information to be reliable, human or mechanical error remains a possibility, as does delay in the posting or updating of information. The information is self-reported by the physician and the Board does not verify the information. Therefore, the Board makes no guarantee as to the accuracy, completeness, timeliness, currency, or correct sequencing of the information. Neither the Board, nor any of the sources of the information, shall be responsible for any errors or omissions, or for the use or results obtained from the use of this information."
- Emergency Nurses
 - U.S. Department of Health and Human Services, Health Resources, and Services Administration (HRSA)
 - Board of Certification for Emergency Nursing (BCEN)
 - Emergency Nurses Association (ENA)
 - California Board of Registered Nursing (CBRN)
- Critical-Care Nurses
 - HRSA
 - American Association of Critical-Care Nurses (AACN)
 - CBRN
- Paramedics
 - National Association of State EMS Officials (NASEMSO)
 - National Registry of Emergency Medical Technicians (NREMT)
 - California (State) Emergency Medical Services Authority (Cal EMSA)
 - Los Angeles County (CA) Emergency Medical Services Agency (LAC EMS Agency)

Additionally, the U.S. Department of Labor's Bureau of Labor Statistics (BLS) website was reviewed, with no results directly applicable to the scope of this section. BLS was contacted by

Occupational Group Analysis

email through their Census of Employment and Wages website, but no response was received prior to completion of this report.

Results

Emergency Physicians

Information regarding the number of ABEM-certified physicians is contained in Table-3: ABEM-Certified Physicians.

Table-3: ABEM-Certified Physicians				
Level	Number of Emergency Physicians	Source	Reference	Information Cut-Off Date
National	26,366	ABMS	2010 ABMS Certificate Statistics (Table 3C) ^[a]	August 2010
State of California	3,582	ABMS	2010 ABMS Certificate Statistics (Table 3C) ^[a]	August 2010
Los Angeles County	188	ABMS	E-mail Response on 19 Sep 2011 ^[b]	September 2011

Adapted from:

^a American Board of Medical Specialties. 2010 ABMS certificate statistics [Internet]. 2010 [updated 2010; cited 2011 Oct]. Available from: <http://shopping.netsuite.com/s.nl/c.362273/it.A/id.166/f>

^b Coyne M (American Board of Medical Specialties / Product Management and Business Development). E-mail to Tim Moriarty (National Center for Disaster Medicine and Public Health) (tmoriarty2@csc.com) 2011 Sep 9 [cited 2011 Oct].

Of particular interest is that once the ABMS provided their results for Los Angeles County, a significant difference between the ABMS and MBC totals was observed: ABMS identified 188 emergency physicians within Los Angeles County while MBC reported 1,247 physicians residing in the county, with 1,173 practicing emergency medicine within the county. (Ms. J. Simoes, Medical Board of California [MBC], personal communication, 2011 Sep15) A possible reason for this disparity is the self-reporting aspect of the MBC totals, since a physician could work in a Los Angeles County emergency room without ABEM certification. This is supported when considering that the county has 9-1-1 receiving hospitals; 188 physicians could not reasonably be expected to staff this number of facilities effectively on a 7-day / 24- hour basis for a county with a population as large as Los Angeles. (Ms. J. Rifenburg, Los Angeles County Department of Health Services [LAC DHS] (Los Angeles County Emergency Medical Services Agency [LAC EMS Agency]), personal communication, 2011 Jul 18)

Critical Care Physicians

Information regarding the number of ABIM-certified critical care physicians is contained in Table-4: ABIM-Certified Critical Care Physicians.

Occupational Group Analysis

Table-4: ABIM-Certified Critical Care Physicians				
Level	Number of Critical Care Physicians	Source	Reference	Information Cut-Off Date
National	7,930	ABMS	2010 ABMS Certificate Statistics (Table 3E) ^[a]	November 2010
State of California	802	ABMS	2010 ABMS Certificate Statistics (Table 3E) ^[a]	November 2010
Los Angeles County	337	ABMS	E-mail Response on 19 Sep 2011 ^[b]	September 2011

Adapted from:

^a American Board of Medical Specialties. 2010 ABMS certificate statistics [Internet]. 2010 [updated 2010; cited 2011 Oct]. Available from: <http://shopping.netsuite.com/s.nl/c.362273/it.A/id.166/f>

^b Coyne M (American Board of Medical Specialties / Product Management and Business Development). E-mail to Tim Moriarty (National Center for Disaster Medicine and Public Health) (tmoriarty2@csc.com) 2011 Sep 9 [cited 2011 Oct].

Again, there was a difference between the ABMS and MBC totals (albeit less so than for emergency physicians) as ABMS identified 337 critical care physicians within Los Angeles County while MBC reported 519 physicians residing in the county, with 496 practicing critical care medicine within the county. (Ms. J. Simoes, MBC, personal communication, 2011 Sep 15) As previously suggested, this disparity is possibly related to the self-reporting aspect of the MBC totals, which do not require ABIM certification.

Emergency Nurses

Information regarding the number of certified emergency nurses is contained in Table-5: Certified Emergency Nurses.

Occupational Group Analysis

Table-5: Certified Emergency Nurses				
Level	Number of Emergency Nurses	Source	Reference	Information Cut-Off Date
National	23,698	BCEN	BCEN E-mail Response on 9 Nov 2011 ^[c]	November 2011
State of California	2,280	BCEN	BCEN E-mail Response on 9 Nov 2011 ^[c]	November 2011
Los Angeles County	161 (Approximately)	ENA	Greater Los Angeles Chapter E-mail Response on 4 Oct 2011 ^[d]	October 2011

Adapted from:

^c De Jesus L. E-mail to Tim Moriarty (National Center for Disaster Medicine and Public Health) (tmoriarty2@csc.com) 2011 Nov 9 [cited 2011 Nov].

^d Snyder C (Emergency Nurses Association / Greater LA Chapter). Email to Tim Moriarty (National Center for Disaster Medicine and Public Health) (tmoriarty2@csc.com) 2011 Oct 4 [cited 2011 Oct].

These totals only reflect Certified Emergency Nurses as opposed to including other nurses working in emergency rooms. By way of comparison, HRSA's report *The Registered Nurse population: Findings from the 2008 national sample survey of Registered Nurses* lists a national-level total of 125,008 emergency nurses, which is presumed to reflect a combined certified and non-certified nursing staff total.^[2]

Critical-Care Nurses

Information regarding the number of AACN certified critical-care nurses is contained in Table-6: AACN Certified Critical-Care Nurses.

Table-6: AACN Certified Critical-Care Nurses				
Level	Number of Critical-Care Nurses	Source	Reference	Information Cut-Off Date
National	54,645	AACN	Association Website ^[e]	December 2010
State of California	6,787	AACN	Association Website ^[e]	December 2010
Los Angeles County	130 (Minimum)	AACN	UCLA Chapter E-mail Response on 29 Sep 2011 ^[f]	September 2011

Adapted from:

^e American Association of Critical Care Nurses Website. CCRNs & CRRN-ES by State – as of January 2011 [map; Internet]. 2011 [cited 2011 Oct]. Available from: <http://www.aacn.org/WD/Certifications/Docs/CCRNByState-Map.pdf>

^f Dermenchyan A. E-mail to Tim Moriarty (National Center for Disaster Medicine and Public Health) (tmoriarty2@csc.com) 2011 Sep 29 [cited 2011 Oct].

Occupational Group Analysis

Of note is HRSA's 2008 nationwide total of critical-care nurses was 58,320 which provides an additional level of confidence in AACN's national number.^[6] Unlike ENA, individual chapter membership totals within the state are not available through the AACN website. E-mail correspondence with five chapters identified in the Los Angeles County area only resulted in one response specifying a total that could be applied to this study and one advising it considered itself too far to be counted; accordingly, the total contained in the table should be considered a minimum number.

Paramedics

Information regarding the number of NREMT-registered paramedics nationwide and in California and the number of LAC EMSA-licensed paramedics is contained in Table-7: Nationwide NREMT-Registered Paramedics & LAC-EMSA Licensed Physicians.

Table-7: Nationwide NREMT-Registered Paramedics & LAC-EMSA Licensed Physicians				
Level	Number of Paramedics	Source	Reference	Information Cut-Off Date
National (less SC, SD, and KS)	203,807	NASEMSO	E-mail Response on 2 Nov 2011 ^[9]	November 2011
State of California	18,757	Cal EMSA	E-mail Response on 29 Sep 2011 ^[10]	September 2011
Los Angeles County	3,742	LAC EMSA	E-mail Response on 18 Aug 2011 ^[11]	August 2011

Adapted from:

^g Gainor D. E-mail to Tim Moriarty (National Center for Disaster Medicine and Public Health) (tmoriarty2@csc.com) 2011 Nov 2 [cited 2011 Nov].

^h Frenn M (California Emergency Medical Services Authority / Disaster Medical Specialist). E-mail to Laurie Chow (National Center for Disaster Medicine and Public Health) (lchow@hjf.org) 2011 Sep 29 [cited 2011 Oct].

The national-level information provided by NASEMSO is based on a survey conducted in support of a report currently being prepared by the U.S. Department of Transportation. In comparison, totals provided by NREMT (72,544 nationwide and 3,517 in California) were based on the December 2010 total number of paramedics that were registered with them; this total is not an accurate measure of the actual number of working paramedics, as continued membership in the national-level registry is not a requirement for licensure renewal in some states, as is the case in California. (Ms. H. Erb, National Registry of Emergency Management Technicians, personal communication, 2011 Sep 13)

Summary

The combined totals for the five specialties are contained in Table-8: Baseline Health Professions Workforce.

Occupational Group Analysis

Table-8: Baseline Health Professions Workforce					
Specialty	Physician		Nurse		Paramedic
Level	Emergency	Critical Care	Emergency	Critical-Care	
National	26,366	7,930	125,008	54,645	203,807 (less SC, SD, & KS)
State of California	3,582	802	2,280	6,787	18,757
Los Angeles County	188	337	161 (Approximately)	130 (Minimum)	3,742

As is evident from the multiple sources and various information cut-off dates cited above, determining a baseline health professions workforce total which addresses multiple levels and includes multiple specialties is a difficult undertaking. This is exacerbated by the lack of linkage between national-level certification and state-level licensure for physicians and nurses, and national-level registration and state-level licensure for paramedics. This creates a challenge for those involved in workforce education that requires a reliable baseline number of workforce personnel.

References

- [1] Garson A. Leveraging the health care workforce: What do we need and what educational system will get us there? Acad Med. 2011 Nov; 86 (11): 1448-53.
- [2] U.S. Department of Health and Human Services. Health Resources and Services Administration. The Registered Nurse population: Findings from the 2008 national sample survey of Registered Nurses [Internet]. 2010 Sep [cited 2011 Oct]. Available from: <http://bhpr.hrsa.gov/healthworkforce/rnsurvey2008.html>

CASE STUDY

Background

The State of California has a greater risk of earthquake damage than any State in the United States due to the proximity of densely populated urban areas to the active fault systems in California. The San Andreas Fault system, which passes through both Los Angeles and Bay Areas, has generated the deadliest earthquakes in U.S. history, including the 1906 San Francisco earthquake (which resulted in more than 3,000 deaths), the 1933 Long Beach earthquake, the 1971 Sylmar earthquake, the 1989 Loma Prieta earthquake, and the 1994 Northridge earthquake. Although earthquakes do not occur frequently, they account for the greatest combined losses (e.g., deaths, injuries, damage costs) of any type of incident. In addition to causing damage from shaking, earthquakes may result in liquefaction, settlement, landslides, and fires. According to the 2007 Working Group on California Earthquake Probabilities, California has a 99.7 percent chance of having a magnitude 6.7 or larger earthquake during the next 30 years. The probability of an earthquake of this magnitude on the southern segment of the San Andreas Fault in the next 30 years is 59 percent.^[1]

Introduction

All disasters happen locally. Naturally, disaster emergency response is also initiated locally. In order to understand who responds to natural disasters, it is critical to examine the natural disaster workforce from a local perspective to seek clarity on available responders. This exploratory case study was conducted to observe what workforce capabilities one county has for disaster emergency response. The purpose of the case study is to describe and characterize the natural disaster workforce from the bottom-up perspective. It is to identify the responders involved in disaster emergency response, but not to evaluate or provide subjective judgment regarding the workforce. The information gleaned from this case is not intended to be generalizable to other counties in the United States, but will provide initial insight in understanding the local disaster workforce as a first step to characterizing the disaster health workforce at multiple levels (including Federal and State).

The case study is focused on Los Angeles County since the existence of the Southern California Earthquake Response Plan demonstrates that this area is active in preparedness and has a well-established natural disaster workforce.^[2] The population density, geographic size, and vulnerability to natural disasters also contributed to the assumption of Los Angeles County's need, and therefore creation of a plan, for preparedness.

This case study report will discuss the natural disaster workforce at the local and State level in relation to Los Angeles County, including jurisdictions within the county borders. This includes the volunteer groups, programs, and networks managed by government agencies. The case study will also provide insight into the workforce, obtained from snowball sampling, within the fire departments, hospitals, and community-based organizations to provide a broader picture of the actual (versus theoretical) public and private sector natural disaster workforce.

Methodology

Twenty in-person, semi-structured interviews with approximately thirty stakeholders were conducted in Los Angeles County and Sacramento, California (State Capital) in six weeks during 2011 to provide a cross-sectional sample, a time-limited observation, into Los Angeles's natural disaster workforce and its connection with the State and Federal entities. An interview guide (see Figure-3: Case Study Interview Guide) was created to facilitate the interviews, ensuring major topics of interest were addressed, such as available workforce team(s), and their structure and composition. Two interviewers conducted three State level interviews, and one additional interview involved a third interviewer over the phone. One interviewer conducted sixteen local level interviews. Most interviews involved speaking with one stakeholder; however, seven interviews included up to four stakeholders from the same organization interviewed in one session. To ensure data was captured, interviews were recorded with a Zoom H2 Recorder with consent from stakeholders and understanding that only the interviewer(s) will access the recording. The recorded interviews were only intended to serve as a supplemental note taking method

<p align="center">Report on Health Professions Workforce Los Angeles County Case Study Meeting Topic Guide</p>	
<p>Main Focus</p> <ul style="list-style-type: none"> • ESF#8 Natural Disaster <i>Workforce</i> (People) • Emphasis on three occupational groups: <ul style="list-style-type: none"> ▪ Emergency & Critical Care Physicians ▪ Emergency & Critical Care Nurses ▪ Paramedics 	
<p>Information Needs (Pertaining to ESF#8 Natural Disaster)</p>	
<ul style="list-style-type: none"> • Workforce <ul style="list-style-type: none"> ▪ Teams available ▪ Surge capability available (if applicable) <p>As applicable to team & surge workforce</p> <ul style="list-style-type: none"> • Composition <ul style="list-style-type: none"> ▪ Overall number of members / volunteers ▪ Professions involved, particular interest on above listed occupational groups ▪ Number of members / volunteers in each profession • Structure <ul style="list-style-type: none"> ▪ Finding recruits / volunteers ▪ Tracking recruits / volunteers ▪ Team requirements (i.e., minimum number of doctors, nurses, paramedics, people per team) ▪ Member/volunteer requirements (i.e., qualifications, standards, competencies) ▪ Tracking credentials and / or licenses ▪ Disaster-related training ▪ Contacting workforce for activation • Interaction with Others <ul style="list-style-type: none"> ▪ Other contacts (team/people/organization/association) work with during disaster. This can be at the same (i.e., city to city level) or different (i.e., city to state) level. 	

Figure-3: Case Study Interview Guide

Various local level stakeholders were interviewed to provide a broad picture of the county workforce capability. State level stakeholders were interviewed to understand the State's

Case Study

capability and perspective on their intermediary relationship between the local and Federal levels. Stakeholders interviewed at the local and State level were identified by snowball sampling, a non-probability sampling with a purpose.^[3] This methodology was deemed an appropriate approach as this is an initial endeavor in understanding the local level natural disaster workforce. This method is useful in identifying key stakeholders involved in disaster emergencies given the assumption that informants will interact with or encounter one another during a disaster emergency. The majority of the stakeholders interviewed were ultimately derived from one key central informant.

Assumptions

The California State Emergency Plan provides State-level strategy to assist local government during a large-scale emergency. Local government agencies in California follow the California State Emergency Plan, which provides several basic assumptions regarding emergencies in the State of California:^[4]

- All incidents are local
- Emergencies may occur at any time with little or no warning and may exceed capabilities of local, State, Federal, and tribal governments, and the private sector in the affected areas
- Emergencies may result in casualties, fatalities, and displace people from their homes
- An emergency can result in property loss, interruption of essential public services, damage to basic infrastructure, and significant harm to the environment
- The greater the complexity, impact, and geographic scope of an emergency, the more multiagency coordination will be required
- The political subdivisions of the State will mobilize to deliver emergency and essential services under all threats and emergencies
- Mutual aid and other forms of assistance will be rendered when impacted jurisdictions exhaust or anticipate exhausting their resources
- Individuals, community-based organizations, and businesses will offer services and support in time of disaster
- State agencies and departments with regulatory oversight responsibilities will continue in their same roles during all phases of an emergency and will insert themselves into the organizational chain to support emergency management efforts
- Neighboring states will come to California's aid through the Emergency Management Assistance Compact or other mechanisms and agreements

Case Study

- The Federal government will provide emergency assistance to California when requested and in accordance with the National Response Framework (NRF)
- Federal and State response and recovery operations will be mutually coordinated to ensure effective mobilization of resources to and in support of the impacted jurisdictions in accordance with the California catastrophic incident base plan: concept of operations

Planning assumptions are based on the California Geological Survey and the United States Geological Survey's ShakeOut Scenario of 2008. The southern San Andreas Fault has generated earthquakes of magnitude 7.8 on average every 150 years—and on a portion of the fault that ruptures in the ShakeOut Scenario, the last earthquake happened more than 300 years ago.^[2]

Based on the United States Geological Survey (USGS) Shakeout Scenario, a 7.8 magnitude catastrophic earthquake in Southern California on the southernmost segment of the San Andreas Fault, between the Salton Sea and Lake Hughes, can cause fault offsets, landslides, liquefaction, and fires that impact eight counties in Southern California (Imperial County, Kern County, Los Angeles County, Orange County, Riverside County, San Bernardino County, San Diego County, and Ventura County) resulting in an estimated \$213 billion in damages. Basic services, including transportation, healthcare, water, power, and communications, will be significantly disrupted. From a healthcare perspective, a catastrophic earthquake in Southern California can result in:^[2]

- 1,800 deaths
- 53,000 injuries
- 4,500 individuals needing rescue
- 300,000 significantly damaged buildings (1 in 16) resulting in 255,000 displaced households, comprising 542,000 individuals, requiring mass care and emergency shelter
- 2.5 million individuals needing shelter and basic resource support (e.g., food, water)

It is estimated the workforce attrition will be nearly 50 percent, thus hampering evacuation operations; however, local health departments, supported by mutual aid, and the California Department of Public Health (CDPH), have sufficient resources to initiate evaluation and response. Vector monitoring and public health support staff will exist, but sustained healthcare demand will exceed capabilities as the system is typically taxed under normal conditions. The California State Emergency Plan predicts:^[2, 4]

- Hospital functionality will decrease by an estimated 30% and estimated 13,000 beds lost
- Shortages will exist in hospital equipment, including beds, and prescription medications
- For the remaining hospitals to continue operation, they will immediately need water, fuel, pharmaceuticals, and personnel
- Initially, 40% of medical special needs patients will require assistance immediately with an additional 40% requiring care within 72 hours and the remaining 20% of the special needs population requiring care within the first week

Case Study

- Patient tracking systems among health care system components are currently not integrated; the ability to coordinate and control the flow of all patients requiring movement will be limited:
 - Many roads, highways, and bridges will initially be impassable after the earthquake due to damage and debris on the roads, hampering patient movement
 - Evacuation may be needed also due to limited gas supplies
 - An estimated 2,600 public and private ambulances will be available statewide; approximately 27% are fire department-operated

The displaced population is expected to have an estimated 267,000 household pets. Veterinary care capacity is inadequate for this surge population; therefore, overflow veterinary facilities need to be identified in other counties, and possibly other states, not impacted by the emergency.^[2]

Emergencies involving the public health and medical system will rely heavily on multi-agency coordination. Mutual aid and cooperative assistance will be rendered to the extent available when affected jurisdictions exhaust or anticipate exhausting their resources.^[5]

County of Los Angeles

There are 58 counties in California. Each county is also an emergency Operational Area (OA), which is comprised of the county and all political subdivisions within the geographic boundaries of the county, and has responsibility for the planning and provision of emergency services within the OA.^[4] Each OA has an Emergency Operations Center (EOC), which is the primary contact and liaison between the State and the local city government, and supports and coordinates the response of the OA's local government. The local city governments are the primary entity responsible for first response during a disaster incident and maintain a separate EOC.^[2]

Los Angeles County (LAC) is one of the 58 counties and OAs in California. It is located in Southern California, shown in blue within Figure-4: Los Angeles County. LAC is the most populated California county with approximately 10 million people. It also spans approximately 4,000 square miles and encapsulates 88 cities.^[6, 7] A catastrophic natural disaster (i.e., earthquake) can potentially affect millions of people and they may need medical aid. In LAC, several health profession workforces from governmental agencies, fire departments, hospitals, and various volunteer organizations exist to aid in natural disaster emergencies.



Figure-4: Los Angeles County

Local Government Health Departments and Health Agency

Local Government Health Departments

There are two county based departments that provide medical and health related services.

- Los Angeles County Department of Public Health (LAC DPH):
"The Los Angeles County Department of Public Health protects health, prevents disease, and promotes the health and well-being for all persons in Los Angeles County."^[8]
- Los Angeles County Department of Health Services (LAC DHS):
"The Los Angeles County Department of Health Services provides acute and rehabilitative patient care, train physicians and other health care clinicians, and conducts patient care-related research."^[9]

Case Study

The county agencies serve the entire LAC OA not covered by three separate, smaller health departments which serve a specific geographical jurisdiction:

- **City of Long Beach Department of Health and Human Services (LB DHHS):**
"The City of Long Beach Department of Health and Human Services mission is to improve the quality of life of the residents of Long Beach by addressing public health and human service needs and by promoting a healthy environment in which to live, work, and play."^[10]
- **Pasadena Public Health Department (PPHD) serving the City of Pasadena:**
"The Pasadena Public Health Department is responsible for helping to protect, maintain, and improve the health of the Pasadena community."^[11]

All employees in any occupational role at any California government agency are disaster service workers (DSWs). The California Government Code Section 3100 states, "...all public employees are hereby declared to be disaster service workers subject to such disaster service activities as may be assigned to them by their superiors or by law."^[12] They must register and sign an oath or affirmation of loyalty to the Constitution of the United States and the California Constitution.^[13] Workers compensation is provided if they are injured while serving DSW duties.^[13]

Local Public Agency

One local public health agency exists serving several communities in LAC:

- **Beach Cities Health District (BCHD):**
Beach Cities Health District (BCHD) is a local public agency known as a specialized health district agency, which is the leading agency offering preventive health and wellness programs to the communities of Hermosa Beach, Manhattan Beach, and Redondo Beach.^[14]

Figure-5: Coverage of Government Health Departments and Health Agencies depicts the area each governmental health department or health agency covers: Los Angeles County represents LAC DPH and LAC DHS, Long Beach, Pasadena, and Beach Cities (Hermosa Beach, Manhattan Beach, and Redondo Beach).

Case Study

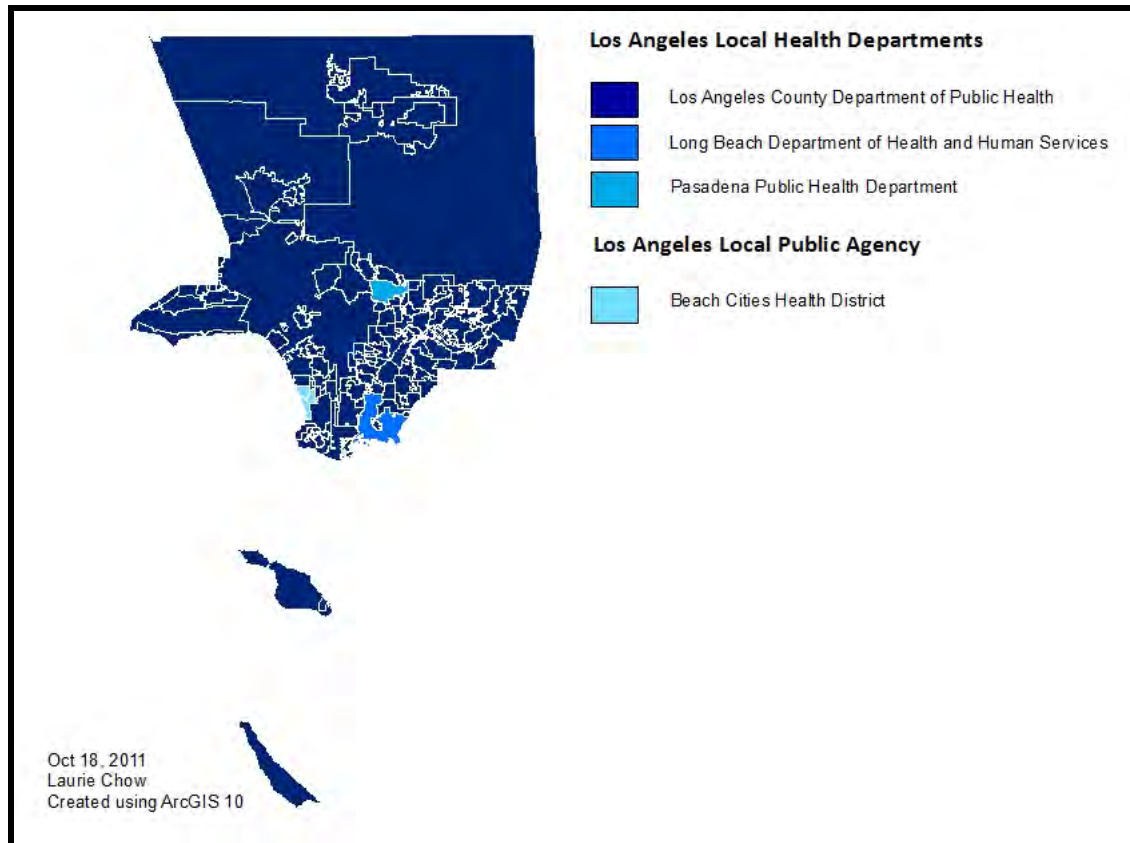


Figure-5: Coverage of Government Health Departments and Health Agencies

Adapted from:

^aLos Angeles County Department of Regional Planning. Maps & GIS. GIS Data [Internet]. 2011 [cited 2012 Jan]. Available from: <http://planning.lacounty.gov/gis/download>

Los Angeles County Disaster Healthcare Volunteers

There are four disaster healthcare volunteer units with a medical and health mission that exist in LAC OA: (1) Medical Reserve Corps (MRC) Los Angeles; (2) Long Beach MRC; (3) Beach Cities Health District MRC; and (4) LA County Surge Unit. All four units utilize the Disaster Health Volunteer (DHV) system, which is California's Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP) system to register and manage their volunteers. The four units, under their respective sponsoring government agency, and PPHD, which does not have a volunteer unit, participate in the Los Angeles County Disaster Healthcare Volunteers (LAC DHV) Collaborative. The purpose of the Collaborative is to synergistically work together to uphold and integrate Federal standards of National ESAR-VHP and MRC to effectively manage, train, and deploy a volunteer workforce to augment existing local medical and public health systems in response to disasters or public health emergencies. (Ms. J. Kim and Mr. J. Ku, Los Angeles County Department of Public Health [LAC DPH] (Emergency Preparedness and Response Program [EPRP]), personal communication, 2011 Jul 14; Ms. B. Harkins, Beach Cities Health District [BCHD], personal communication, 2011 July 15; Ms. S. Shields, Los Angeles County Department of Health Services [LAC DHS] (Los Angeles County Emergency Medical Services Agency [LAC EMS Agency]), personal communication, 2011 Jul 19; Ms. D. Brown and Ms. V. Ornelas, City of Long Beach Department of Health and Human

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Services [LB DHHS], personal communication, 2011 Jul 19; Ms. A. Kung, Pasadena Public Health Department [PPHD], personal communication; 2011 Aug 1)

Figure-6: LAC DHV Collaborative displays the relationship amongst the units, government agency, and LAC DHV Collaborative. The three MRC units, a public health and medical volunteer group, are sponsored and managed by LAC DPH, LB DHHS, and BCHD. The LA County Surge Unit is sponsored and managed by LAC DHS's Los Angeles Emergency Medical Services Agency (LAC EMS Agency). Both LAC EMS Agency and LAC DPH's Emergency Preparedness and Response Program (EPRP) chair the LAC DHV Collaborative. LAC EMS Agency will take lead of LAC DHV Collaborative if a medical emergency occurs and EPRP will take lead during a public health emergency. (Ms. J. Kim and Mr. J. Ku, LAC DPH [EPRP], personal communication, 2011 Jul 14; Ms. B. Harkins, BCHD, personal communication, 2011 Jul 15; Ms. S. Shields, LAC DHS [LAC EMS Agency], personal communication, 2011 Jul 19; Ms. D. Brown and Ms. V. Ornelas, LB DHHS, personal communication, 2011 Jul 19; Ms. A. Kung, PPHD, personal communication; 2011 Aug 1)

The DHV system creates a profile for each volunteer, and any credential and licensing information entered is regularly verified by the DHV system for active status. When there is a request for assistance and volunteer activation is needed, unit coordinators will contact volunteers through the DHV system. The mode of contact depends on a volunteer's noted contact preference (i.e., email, telephone, text message) in their DHV profile. When contacted, volunteers are asked for their availability to respond. There are four assumptions regarding volunteers:

- Volunteers deployed through the DHV system are not first responders
- Volunteers in the DHV system are not self-deploying or self-supporting (either as individuals or units)
- Volunteers enrolled in the DHV system are volunteers; therefore, deployment availability is not compulsory
- Volunteers are not assets (concrete workforce resource) (Ms. S. Shields, LAC DHS [LAC EMS Agency], personal communication, 2011 Jul 19)

Before being deployed, every volunteer must register as a Disaster Service Worker, which includes a pledge and sign an oath of support. While deployed, a volunteer is protected from liability in accordance to the legal parameters set forth by the County, State, and Federal statutes. (Ms. S. Shields, LAC DHS [LAC EMS Agency], personal communication, 2011 Jul 19)

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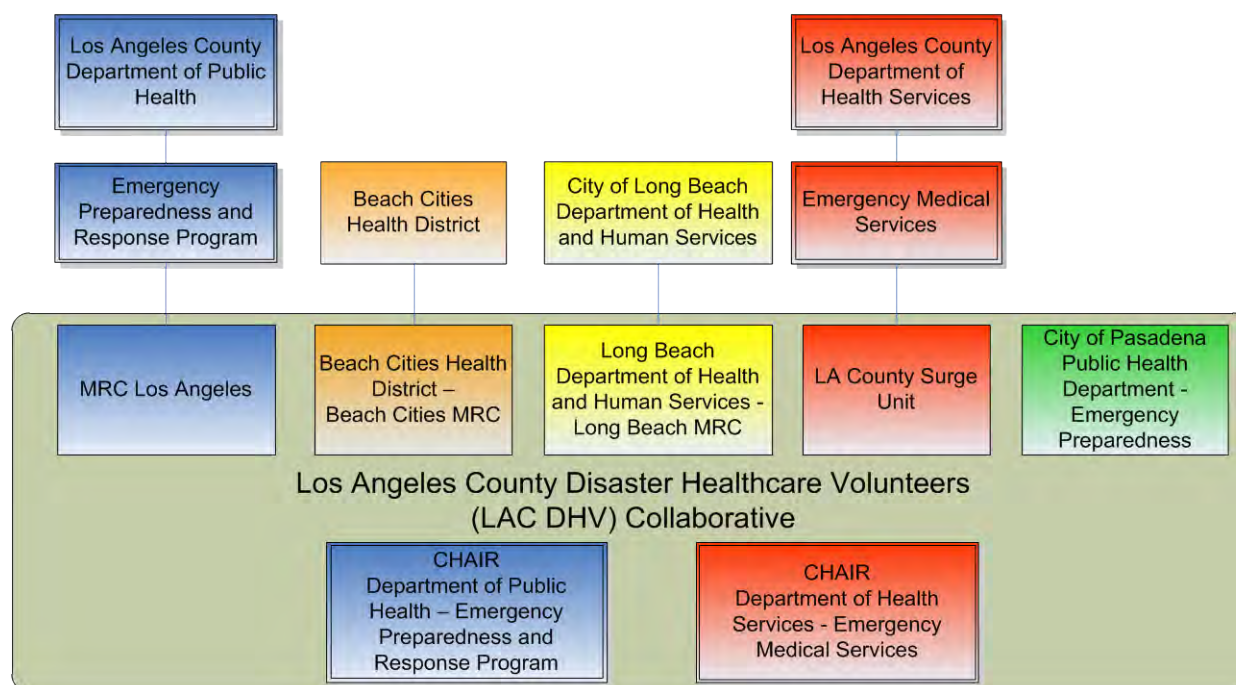


Figure-6: LAC DHV Collaborative

Los Angeles County Department of Public Health (LAC DPH) / Emergency Preparedness and Response Program (EPRP)

The Los Angeles County Department of Public Health (LAC DPH) is Los Angeles County's public health department, which works to "protect health, prevent disease, and promote the health and well-being of people in LAC."^[8] It manages over 50 programs including the Emergency Preparedness and Response Program (EPRP), which is responsible for mitigating and preventing public health related natural or intentional emergencies in LAC.^[15] Two emergency volunteer projects under EPRP are: (1) Medical Reserve Corps (MRC) Los Angeles and (2) Public Health Emergency Volunteer (PHEV) Network.

- **Medical Reserve Corps (MRC) Los Angeles**

MRC Los Angeles is the volunteer unit directly sponsored and housed in the Department of Public Health – Emergency Preparedness and Response Program. Their primary mission is to assist during public health emergencies and promote health education and engagement. As of July 2011, MRC LA is the largest MRC group in LAC OA with 1,471 volunteers. The most populated occupational groups are registered nurses (n=260); pharmacists (n=147), and physicians, including DO and MD (n=142). A large portion (n=514) of volunteers are categorized as an "other" occupational group. (Ms. J. Kim and Mr. J. Ku, LAC DPH [EPRP], personal communication, 2011 Jul 14)

Currently, MRC Los Angeles is mainly focused on retention efforts of registered volunteers. Volunteers are passively recruited (e.g., word-of-mouth, web presence, good-will) with limited targeted recruitment presentations. All volunteers are registered through the DHV system. Members are encouraged to complete registration online. This includes their license

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and credential information, which is required if they want to volunteer under a licensed or credentialed profession. (Ms. J. Kim and Mr. J. Ku, LAC DPH [EPRP], personal communication, 2011 Jul 14)

MRC Los Angeles established a training plan based on the National MRC Core Competencies, unique to the unit, which places volunteers at circle levels depending on the level of training achieved. There are five circle levels: (1) Member; (2) Active Member; (3) Gold; (4) Platinum; and (5) Star. Each level requirement includes the preceding level requirement. The basic requirement for all levels is to complete registration in DHV. Each successive level requires a volunteer to meet a specific set of competencies (i.e., demonstrate ability to follow procedures for assignment, reporting to unit leader, and activation for deployment) and training (e.g., incident command, psychological first aid), and attend in-person MRC Los Angeles event(s). Each circle level also corresponds to a volunteer's deployment eligibility (i.e., local, State, out-of-State, or MRC Federal Team deployment). (Ms. J. Kim and Mr. J. Ku, LAC DPH [EPRP], personal communication, 2011 Jul 14)

Various methods are used for volunteer retention. MRC Los Angeles engages the volunteers in meetings, conferences, trainings, and exercises. They also provide Continuing Medical Education and Continuing Education Units when possible. A Career Mentoring Program was piloted to match veteran professionals with providing guidance to young professionals. Team spirit is also fostered with a website offering online space to interact with other MRC Los Angeles volunteers or obtain current MRC Los Angeles related news and events. Volunteer recognition is provided, which includes acknowledging individual training and hours completed (e.g., certificate), providing emergency preparedness items (e.g., MRC-related gear for go-kits), volunteer spotlight (e.g., special individual recognition), and a yearly appreciation event. (Ms. J. Kim and Mr. J. Ku, LAC DPH [EPRP], personal communication, 2011 Jul 14)

- **Public Health Emergency Volunteer (PHEV) Network**

The Public Health Emergency Volunteer (PHEV) Network was recently chartered in 2011 to build a network of already established community volunteers groups, unlike the MRC and Surge units, which are comprised of individuals. The purpose of PHEV Network is to effectively coordinate and engage established community volunteer units in an effort to expand readiness for public health emergencies. The goal is for community volunteer units and LAC DPH to work more seamlessly by creating a systematic process for pre-identifying, training, and deploying community volunteer units. The PHEV Network Coordinator, the contact person from EPRP, never works directly with the volunteers within the community volunteer units and only works with the point-of-contact designated by the community volunteer unit. The PHEV Network Coordinator is responsible for: (Ms. J. Kim and Mr. J. Ku, LAC DPH [EPRP], personal communication, 2011 Jul 14)

- Offering two public health and emergencies related trainings annually
- Communicating with the community volunteer unit points-of-contact
- Maintaining community volunteer unit contact information
- Nurturing collaborative efforts with community volunteer units

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- Coordinating with the designated point-of-contact during public health emergencies (Ms. J. Kim and Mr. J. Ku, LAC DPH [EPRP], personal communication, 2011 Jul 14)

The expectations of the community volunteer units are:

- Willing to assist during public health emergencies through LAC DPH
- Appointing a primary and secondary point of contact for the PHEV Network
- Updating the PHEV Network Coordinator of any point-of-contact change (Ms. J. Kim and Mr. J. Ku, LAC DPH (EPRP), personal communication, 2011 Jul 14)

Los Angeles County Department of Health Services (LAC DHS) / Los Angeles County Emergency Medical Services Agency (LAC EMS Agency)

The mission of the Los Angeles County Department of Health Services (LAC DHS) is to ensure access to high-quality, patient-centered, cost-effective health care to Los Angeles County residents through direct services at LAC DHS facilities and through collaboration with community and university partners. LAC DHS operates three acute care hospitals, an acute rehabilitation hospital, and a network of outpatient comprehensive care centers throughout the county.^[16] Under LAC DHS is the Emergency Medical Services Agency (LAC EMS Agency). The LAC EMS Agency is responsible for coordinating the county's emergency medical services systems including hospitals, fire departments, and ambulance companies to ensure timely, compassionate and quality emergency and disaster services to more than 10 million residents and visitors.^[17] The EMS Agency also serves as the county's Disaster Medical and Health Coordinator.

• **Disaster Resource Center (DRC)**

The LAC Disaster Resource Center (DRC) program is a grant initiative of the Hospital Preparedness Program (HPP). The LAC EMS Agency is a direct recipient of the HHS HPP grant and coordinates the HPP program for the county. The goal of the DRC program is to provide leadership and funding to improve surge capacity, including the development of plans, relationships, and procedures that enhance community and hospital preparedness for disasters, terrorist incidents, and other public health emergencies. There are 103 acute care hospitals in LAC and 83 of those hospitals participate in HPP. Thirteen geographically located hospitals volunteered to become DRCs and function as the lead coordinators for their region for disaster planning and exercises. The rest of the hospitals, by geographic proximity, are assigned to a DRC.^[18, 19] Thirty three community clinics (representing over 90 sites) also participate in the DRC program and are coordinated through the Community Clinic Association of Los Angeles County DRC.^[18, 19] (Ms. J. Rifenburg, LAC DHS [LAC EMS Agency], personal communication, 2011 Jul 18)

A DRC hospital is required to provide a disaster coordinator to manage the program. They also house DRC resources for their DRC region. Resources include:

- Tent shelters
- Medical supply cache
- Pharmaceutical cache

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- Ventilators
 - Communication equipment, and
 - A notification system^[18]
- **Los Angeles County Surge Unit**

The Los Angeles County Surge Unit is a "hospital ready" disaster volunteer group. It is a medical and hospital focused unit with volunteers who want to be primarily assigned to a hospital following a disaster. As of July 2011, the Surge Unit had 2,186 volunteers and the most populated occupations were registered nurses (n=884); physicians, including DO and MD (n=278); pharmacists (n=152); and physician assistant (n=138). (Ms. S. Shields, LAC DHS [LAC EMS Agency], personal communication, 2011 Jul 19)

Surge unit recruitment is done through lectures, grand rounds, and health fairs with an emphasis in targeting hospital settings. It is also possible to place a volunteer in a surge unit if they directly apply through the DHV system and do not wish to join a MRC unit. All volunteers must register through DHV and it is the primary source of contact for communication and activation. (Ms. S. Shields, LAC DHS [LAC EMS Agency], personal communication, 2011 Jul 19)

To volunteer in a health profession role, the volunteer must register in the DHV system and provide information on their current license and certification. They must also maintain an active practice and be currently on staff at a medical, health, or mental health setting in LAC, or recently retired from a medical, health, or mental health setting in LAC in the past five years with a current license. General volunteers can apply also, but can only fill non-medical support roles. (Ms. S. Shields, LAC DHS [LAC EMS Agency], personal communication, 2011 Jul 19)

No training requirement exists for surge unit volunteers beyond maintenance of licensure and certification; however, training opportunities are offered. A training conference is offered yearly and a training exercise is offered approximately every six months. Notification exercises may also occur, but they are not scheduled on a specified timeline. (Ms. S. Shields, LAC DHS [LAC EMS Agency], personal communication, 2011 Jul 19)

Los Angeles County Based Disaster Medical Assistance Team (DMAT CA-9)

The U.S. Health and Human Services Disaster Medical Assistance Team (DMAT) which deploys out of the greater Los Angeles area is known as "DMAT CA-9." It is one of 79 operational DMATs in the United States. DMATs are now wholly Federal resources that were at one time sponsored by local entities either through local government agency or private sponsorship. In 2003 following the creation of the Department of Homeland Security, DMATs were moved under the Federal Emergency Management Agency. DMAT employees were originally volunteers and are now intermittent Federal employees protected under the Uniformed Services Employment and Reemployment Rights Act when federally activated. In January 2007 DMATs were moved back under U.S. Health and Human Services under the Assistant Secretary for Preparedness and Response (ASPR). DMATs are deployed for Federal purposes, such as a

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presidentially declared natural disaster emergency or an authorized training or exercise event.^[20] (Dr. J. Celentano, LAC DHS [LAC EMS Agency], personal communication, 2011 Jul 20)

Currently DMAT CA-9 has between 50-60 personnel and is actively recruiting more personnel. A full team roster has a total of 150 personnel comprised of medical and non-medical support staff. A 150 personnel pool may be divided into three modules (teams). Typically, a DMAT team structure consists of 50 personnel. The team composition includes command, medical, administrative, and logistic staff with specified leadership positions of Team Leader, Deputy Team Leader, Administrative Officer, Training Officer, and Logistics Officer.^[20, 21] (Dr. J. Celentano, LAC DHS [LAC EMS Agency], personal communication, 2011 Jul 20)

DMAT recruitment is generally accomplished through word-of-mouth, and by visiting and speaking to hospital staff. Online website recruitment is currently in the works. Training and deployment activities are based on the National Disaster Medical System training protocols and standards which occur through a combination of online training, local and regional field training and exercises.^[20] (Dr. J. Celentano, LAC DHS [LAC EMS Agency] personal communication, 2011 Jul 20)

City of Long Beach Department of Health and Human Services (LB DHHS)

The City of Long Beach Department of Health and Human Services (LB DHHS) serves the City of Long Beach, an area of approximately 50 square miles with a population of approximately 460,000 people.^[22, 23] They manage the Long Beach MRC (LB MRC), which consisted of 136 volunteers as of July 2011. The most populated occupation groups were registered nurses (n=61); physicians, including DO and MD (n=19); and public health nurses (n=12). A small number of volunteers are "other, non-medical"—15 volunteers (11%). (Ms. D. Brown and Ms. V. Ornelas, LB DHHS, personal communication, 2011 Jul 19)

A specific recruitment method does not exist; however, volunteers are recruited through medical profession-focused health fairs, when visiting hospitals, or through word-of-mouth. There is no limit on the maximum number of volunteers in LB MRC.

When a request for assistance is made to LB MRC, the unit leader will contact volunteers through the DHV system. If additional emergency assistance is needed beyond the capacity of the Long Beach MRC, a request may be made directly to MRC Los Angeles. However, if there is an operational area-wide emergency, LB DHHS's request for additional volunteers will need to go to the City of Long Beach Emergency Communications and Operations Center as dictated by the California Standardized Emergency Management System (SEMS). (Ms. D. Brown and Ms. V. Ornelas, LB DHHS, personal communication, 2011 Jul 19)

Training is not mandatory, but opportunities are offered. Typically, volunteers have a chance to voice their training topic preference. Examples of training include psychological first aid and Simple Triage and Rapid Treatment (START). LB MRC works collaboratively with MRC LA. When MRC Los Angeles offers training, several spots are offered to LB MRC volunteers. (Ms. D. Brown and Ms. V. Ornelas, LB DHHS, personal communication, 2011 Jul 19)

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Currently, volunteer retention is maintained in the form of training and opportunities for volunteers to voice their input in unit development. There is no volunteer recognition program; however, it is in development. (Ms. D. Brown and Ms. V. Ornelas, LB DHHS, personal communication, 2011 Jul 19)

Pasadena Public Health Department (PPHD)

The Pasadena Public Health Department (PPHD) serves the City of Pasadena, an area of approximately 22.5 square miles with a population of approximately 140,000 people.^[24, 25] They do not manage a volunteer group; however the Pasadena Public Health Department is a core member of the LAC DHV Collaborative. Any emergency requests for volunteers or assistance are forwarded to LAC DPH. (Ms. A. Kung, PPHD, personal communication, 2011 Aug 8)

Beach Cities Health District (BCHD)

The Beach Cities Health District (BCHD) serves the Cities of Hermosa Beach, Manhattan Beach, and Redondo Beach with a focus on preventive health and wellness programming.^[14] BCHD oversees a combined area of approximately 12 square miles and population of approximately 120,000 people.^[26-31] BCHD manages the Beach Cities Health District Medical Reserve Corps (BCHD MRC), which has 100 volunteers as of August 2011. The most populated occupation groups were registered nurses (n=57) and physicians (n=15). (Ms. B. Harkins, BCHD, personal communication, 2011 Jul 15)

Currently, BCHD MRC is focused on retention of volunteers. Past recruitment campaigns have included the utilization of letter campaigns, advertisements, and posters. BCHD MRC resources are located on the BCHD website. BCHD MRC unit composition is 100 actively licensed medical and mental health professionals. (Ms. B. Harkins, BCHD, personal communication, 2011 Jul 15)

The BCHD MRC volunteer application process requires more than an application with the DHV system. It also includes a supplemental BCHD MRC application, in-person interview, two reference checks, and a license check. (Ms. B. Harkins, BCHD, personal communication, 2011 Jul 15)

BCHD MRC volunteers must complete two additional incident command trainings, in addition to the two national MRC requirements for deployment. BCHD MRC picks a training focus annually to address the national MRC core competencies. As a component of the training plan, START and psychological first aid are offered. (Ms. B. Harkins, BCHD, personal communication, 2011 Jul 15)

When an emergency request for volunteers is made to BCHD MRC, the unit leader will contact volunteers through the DHV system. Based on availability and the parameters of the request, BCHD MRC volunteers will be deployed. (Ms. B. Harkins, BCHD, personal communication, 2011 Jul 15)

Local Government Fire Departments

Firefighters are one of the first responders to a disaster emergency. LAC OA has one county and over 30 city fire departments. Los Angeles County Fire Department (LACoFD) is the largest fire department with approximately 2,900 firefighters and is contracted to provide services to approximately 65 cities within LAC, which do not have their own fire departments.^[32] All firefighters in LAC are trained as Emergency Medical Technicians (EMTs) with a subset trained as paramedics. Firefighters who are paramedics have either chosen the additional role or are requested to do so. (Ms. E. Anguiano, Los Angeles County Fire Department [LACoFD], personal communication, 2011 Aug 3)

All firefighters are required to maintain their EMT certification. They also regularly participate in multi-casualty drills. All battalion chiefs are required to take Incident Command System training. (Ms. E. Anguiano, LACoFD, personal communication, 2011 Aug 3)

LACoFD has specific staffing ratios for emergency response calls, which is in correlation with their emergency response vehicles. There are two types of response vehicles sent to the scene when LACoFD receives an emergency call: (1) engine; and (2) squad. An engine is a fire truck, which is staffed by three firefighters with no specific staff requirement for a paramedic. A squad is a fire department ambulance used to respond for advanced life support situations and is staffed with two firefighters who are trained as paramedics. Typically, both response vehicles are sent to the emergency scene. If medical transport is needed, a contracted ambulance will also arrive at the scene to transport patients since a fire department ambulance is not allowed to transport patients. (Ms. E. Anguiano, LACoFD, personal communication, 2011 Aug 3)

LACoFD has several specialty teams responding to specific emergency situations. The California Task Force 2 (CA-TF2) is one team, which is an Urban Search and Rescue Task Force, sponsored by LACoFD and partnered with the Federal Emergency Management Agency for domestic disaster response, and the United States Agency for International Development, Office of Foreign Disaster Assistance for international disaster response and humanitarian relief missions. CA-TF2 responds to domestic and international natural and man-made disasters with first priority given to local responses. There are approximately 74 members, with 4-6 members who are paramedics, on the CA-TF2 and the team is able to split into smaller units ranging from 14 to 74 staff, as needed. CA-TF2 members must complete seven core training courses to qualify for application to the team. The training includes courses on structural collapse search and rescue, emergency building shoring, rope rescue, water rescue, confined space rescue, trench rescue, and mechanical rescue. They must also maintain specific certifications, such as advance cardiac life support, pediatric advance life supports, and pre-hospital trauma.^[32] (Ms. E. Anguiano, LACoFD, personal communication, 2011 Aug 3)

Hospitals

LAC has 101 acute care hospitals and 79 of those hospitals are 9-1-1 receiving hospitals.^[18] Each hospital has its own business practice and theoretically can operate differently; however, data from five hospitals with varying capacities (e.g., number of beds) and resources (e.g., trauma center, hospital size) indicate they operate similarly when it comes to disaster

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emergencies. Hospitals may have a decontamination or rapid response team, but do not typically have a specialized team for natural disaster emergencies. When additional staffing is needed, the hospital's response protocol is usually to utilize in-house staffing before reaching to LAC for assistance. Figure-7: Hospital Staffing Process shows the staffing process, which includes on-duty and off-duty staff, nursing registry, sister or Mutual Aid Memorandum of Understanding hospitals, and volunteers.

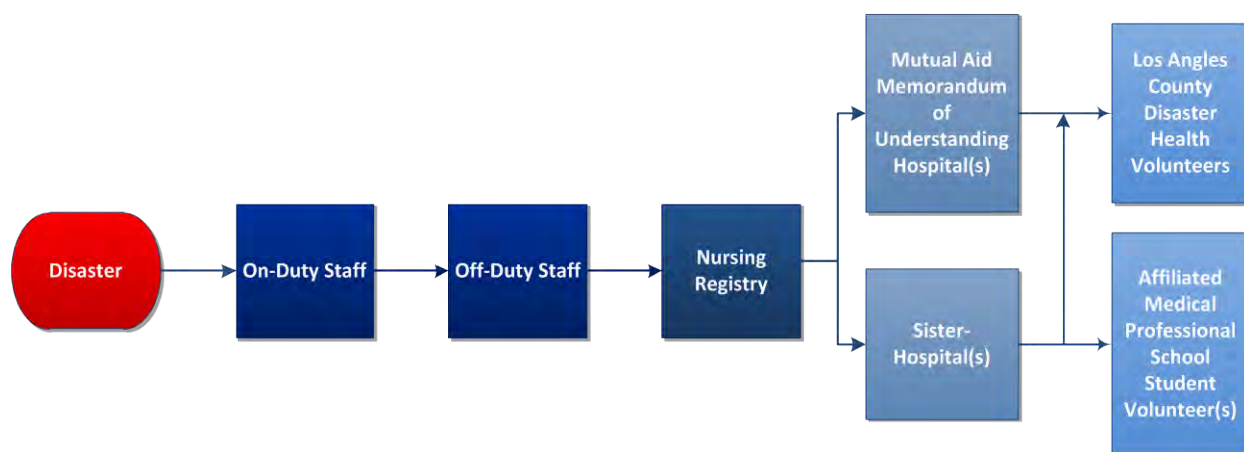


Figure-7: Hospital Staffing Process

Adapted from:

^bMs. J. Rifenburg, LAC DHS (LAC EMS Agency) personal communication, 2011 Jul 18

^cDr. R. Zoraster, Ms. I. Oropeza, Ms. C. Snyder, Whittier Presbyterian Intercommunity Hospital, personal communication, 2011 Jul 18; Ms. S. Shields, LAC DHS (LAC EMS Agency), personal communication, 2011 Jul 19

^eMs. L. Bloomfield, Pomona Valley Hospital Medical Center, personal communication, 2011 Jul 22

^fMs. C. Sendis, Mr. S. Castilleja, and Mr. A. De La Rosa, Monterey Park Hospital, personal communication, 2011 Jul 26

^gMr. K. Kainsinger, Ronald Reagan UCLA Medical Center, personal communication, 2011 Jul 27

^hMs. T. Richardson, Community Hospital of Long Beach, personal communication, 2011 Jul 28

There is an expectation of on-duty staff serving as the first providers responding to patient surges in the hospital. If additional assistance is needed, then off-duty staff is called. Many hospitals will contact staff utilizing a telephone tree, where hospital department heads are notified to start requesting their staff members for duty. If an off-duty staff member anticipates or self-assesses a need for more staff, they may come into the hospital on their own accord. Depending on time sensitivity and the disaster scenario, additional nurses are contacted through a nursing registry service to augment the staff. The nursing registry service is a separate organization from the hospital, and hospitals contract with nursing registry services of their choice; it is possible for several hospitals to contract with the same nursing registry service. This is intended to allow the hospital to ensure continuity and quality of care since the registry service nurses are pre-verified, experienced, licensed, and credentialed. No other staff registry is available for augmenting the other professions; however, augmentation may occur by sharing resources with a sister hospital, if applicable, or a hospital with an established Mutual Aid Memorandum of Understanding, which is a voluntary agreement among hospitals to provide assistance during a medical disaster. (Ms. J. Rifenburg, LAC DHS [LAC EMS Agency], personal communication, 2011 Jul 18; Dr. R. Zoraster, Ms. I. Oropeza, Ms. C. Snyder, Whittier Presbyterian Intercommunity Hospital, personal communication, 2011 Jul 18; Ms. S. Shields, LAC DHS [LAC EMS Agency], personal

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communication, 2011 Jul 19; Ms. L. Bloomfield, Pomona Valley Hospital Medical Center, personal communication, 2011 Jul 22; Ms. C. Sendis, Mr. S. Castilleja, and Mr. A. De La Rosa, Monterey Park Hospital, personal communication, 2011 Jul 26; Mr. K. Kainsinger, Ronald Reagan UCLA Medical Center, personal communication, 2011 Jul 27; Ms. T. Richardson, Community Hospital of Long Beach, personal communication, 2011 Jul 28)

Should the hospital need more staff, volunteers are requested. If the hospital is affiliated or has a relationship with a medical or nursing school, medical or nursing students with certain levels of clinical competency may volunteer their skills. Concurrently, the hospital may also request more staff through the LAC DHS Department Operations Center (DOC) operated by the LAC EMS Agency. During regular operations as well as disasters, the EMSA coordinates the transfer of patients from hospitals, and tracks bed availability and the diversion status of 9-1-1 receiving hospitals 24 hours a day through the Medical Alert Center (MAC). The MAC uses an emergency communication system called ReddiNet and functions as the communication center for the DOC. During a disaster, hospitals can contact the DHS DOC through the MAC when they need assistance, including the need to redirect patients or request additional resources, including additional staff. Once LAC EMS Agency receives a request for additional staff, volunteers from the DHV, likely the Los Angeles County Surge Unit, are called for assistance. LAC EMS Agency can also request volunteers from the three MRC Units in LAC. If the need exhausts county resources, then State assistance is requested.^[33, 34] (Ms. J. Rifenburg, LAC DHS [LAC EMS Agency], personal communication, 2011 Jul 18; Dr. R. Zoraster, Ms. I. Oropeza, Ms. C. Snyder, Whittier Presbyterian Intercommunity Hospital, personal communication, 2011 Jul 18; Ms. S. Shields, LAC DHS [LAC EMS Agency], personal communication, 2011 Jul 19; Ms. L. Bloomfield, Pomona Valley Hospital Medical Center, personal communication, 2011 Jul 22; Ms. C. Sendis, Mr. S. Castilleja, and Mr. A. De La Rosa, Monterey Park Hospital, personal communication, 2011 Jul 26; Mr. K. Kainsinger, Ronald Reagan UCLA Medical Center, personal communication, 2011 Jul 27; Ms. T. Richardson, Community Hospital of Long Beach, personal communication, 2011 Jul 28)

Healthcare professionals typically maintain training as required for their professional certification and licensure as either a condition of receiving clinical privileges (physicians) or employment (nurses). Hospitals offer various, optional disaster training and table top exercises to staff. Most required training is for administrative staff (e.g., supervisor), such as Incident Command System training. Hospitals are required to conduct at least one disaster exercise annually as well as participate in a statewide medical and health disaster exercise annually. (Ms. J. Rifenburg, LAC DHS [LAC EMS Agency], personal communication, 2011 Jul 18; Dr. R. Zoraster, Ms. I. Oropeza, Ms. C. Snyder, Whittier Presbyterian Intercommunity Hospital, personal communication, 2011 Jul 18; Ms. S. Shields, LAC DHS [LAC EMS Agency], personal communication, 2011 Jul 19; Ms. L. Bloomfield, Pomona Valley Hospital Medical Center, personal communication, 2011 Jul 22; Ms. C. Sendis, Mr. S. Castilleja, and Mr. A. De La Rosa, Monterey Park Hospital, personal communication, 2011 Jul 26; Mr. K. Kainsinger, Ronald Reagan UCLA Medical Center, personal communication, 2011 Jul 27; Ms. T. Richardson, Community Hospital of Long Beach, personal communication, 2011 Jul 28)

Community-Based Volunteer Organizations

Public and private sector organizations are not the only responders to disaster emergencies. Community-based organizations also contribute their workforce for disaster emergency assistance. Multiple community-based organizations exist in LAC and can contribute in a support or medical role. The Public Health Emergency Volunteer (PHEV) Network, recently developed by LAC DPH and described earlier in this case study, is meant to collaborate and unify community-based organization response in an emergency. As of July 2011, four community-based organizations participate in the PHEV Network; two examples of the organizations are the Pomona Community Emergency Response Team and Buddhist Tzu Chi Foundation. (Ms. J. Kim and Mr. J. Ku, LAC DPH [EPRP], personal communication, 2011 Jul 14)

- **Community Emergency Response Team (CERT)**

The Community Emergency Response Team (CERT) is a community-based team in which local residents are able to assist and respond to an emergency before first responders arrive at a scene. The concept is to train community members to keep themselves safer when assisting others versus spontaneously volunteering and unknowingly endangering themselves while trying to help others. CERT teams do not function in a medical capacity, but the primary mission is to serve as support volunteers.^[35] (Ms. D. McFall, Pomona Community Emergency Response Team [CERT], personal communication, 2011 Jul 20)

There are over 40 CERT teams in LAC.^[36] Many teams are managed by local fire departments. Pomona CERT is an example of one such team in LAC. It is a small team managed by California Polytechnic State University, Pomona with approximately 14 members and with varying occupation roles, such as construction, warehousing, information technology, or administration.

Pomona CERT volunteers are recruited through two avenues. One is self-recruitment through the Los Angeles County Fire Department website. The second way is a targeting recruitment effort towards a certain group, such as by profession, through flyers in strategic locations or trainings which may be populated by interested individuals. (Ms. D. McFall, Pomona CERT, personal communication, 2011 Jul 20)

CERT volunteers do not have a credential or license requirement. There is a mandatory training requirement, with a minimum of 20 training hours, to join CERT as a level 1 (basic) volunteer. Levels 2 and 3 are available, which requires more training and CERT participation. Initial training is typically one day a week for seven weeks; however, an accelerated or tailored program may also occur. Training conducted in LAC is free of charge. Pomona CERT offers monthly disaster-related training.^[37] (Ms. D. McFall, Pomona CERT, personal communication, 2011 Jul 20)

The Pomona CERT team is called into action if the PHEV Network Coordinator asks for assistance or there is a public health emergency. No standard procedure for contacting

volunteers currently exists; however, volunteers can be contacted by email or phone for assistance. (Debbi McFall, Pomona CERT, personal communication, 2011 Jul 20)

- **Buddhist Tzu Chi Foundation**

The Buddhist Tzu Chi Foundation (Tzu Chi) is a faith-based, non-profit organization with multiple international locations. Tzu Chi has offices in over 25 states with the most concentrated in California. The national headquarters is in San Dimas, Los Angeles County. Tzu Chi is focused on providing: (1) charity; (2) medicine; (3) education; and (4) humanistic culture^[38]. Their mission of charity "provides financial, medical, spiritual, and other services in times of need," which includes disaster relief services and the mission of medicine is to provide "medical services to people in need, regardless of ethnicity, socio-economic status, and religion."^[38] (Ms. D. Boudreaux, Buddhist Tzu Chi Foundation [Tzu Chi], personal communication, 2011 Aug 4)

Tzu Chi operates four types of clinics and all are located in LAC: (1) Buddhist Tzu Chi Free Clinics; (2) Tzu Chi Community Clinic at South El Monte; (3) Tzu Chi Alternative Medicine Clinics; and (4) Tzu Chi Dental Community Clinic. They also own four mobile dental vans located in Alhambra (CA), Fresno (CA), and Milpitas (CA). These assets are used to fulfill the foundation's mission, and they may be employed in disaster emergency situations.^[38] (Ms. D. Boudreaux, Tzu Chi, personal communication, 2011 Aug 4)

Tzu Chi volunteers are recruited through volunteer referral, the website, or are self-recruited. There are no required qualifications to volunteer in a non-clinical position; however, an active license or credential, and background check are needed to volunteer clinically. Clinical volunteers are covered under malpractice insurance if volunteering under Tzu Chi. All volunteers are responsible for their own travel expenses with an understanding they need to financially sustain themselves and deploy for approximately 1-2 weeks. Los Angeles based Tzu Chi has approximately 65 physicians, including 4-5 emergency or critical care physicians, 43 nurses, including 7-8 emergency or critical care nurses, 31 acupuncturists, 37 dentists, 43 dental assistants, and 71 administrative volunteers. (Ms. D. Boudreaux, Tzu Chi, personal communication, 2011 Aug 4)

Tzu Chi International Medical Association (TIMA) is a medical professional volunteer network dedicated to treat people who need medical care, including during disaster emergency situations. TIMA has collectively over 8,000 volunteers from various countries throughout the world and will respond in domestic or international settings. TIMA volunteers who are geographically closer to the disaster emergency location are requested to assist first, thus if an incident occurs in Los Angeles TIMA volunteers in the area are the first to respond. (Ms. D. Boudreaux, Tzu Chi, personal communication, 2011 Aug 4)

Volunteers respond to a disaster emergency in Los Angeles by working with LAC DPH through the PHEV Network, to assist using their resources and volunteers. Tzu Chi will email or call volunteers within the neighborhood structure for availability and deployment. (Ms. D. Boudreaux, Tzu Chi, personal communication, 2011 Aug 4)

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Tzu Chi offers general training to their volunteers, often focused around Tzu Chi's four missions. Many of the trainings are conducted in Chinese, which is the primary language for many of the volunteers, and provides critical cultural competence and language skills during a disaster response. Some training is offered through the PHEV Network, which includes spots at MRC trainings. Much outside training is with the Red Cross and includes first aid and cardiopulmonary resuscitation classes. (Ms. D. Boudreaux, Tzu Chi, personal communication, 2011 Aug 4)

State of California

When counties in California require additional disaster emergency assistance, they follow SEMS. Working through the structure as described in SEMS and the National Incident Management System, they will submit requests to the Southern Regional Emergency Operations Center to access the California Emergency Management Agency (Cal EMA). For medical and health support, depending on the scale of the incident, they may also access the Regional Disaster Medical Health Coordinator who will contact one of two departments under the California Health and Human Services Agency: (1) California Emergency Medical Services Authority (Cal EMSA) or (2) California Department of Public Health (CDPH). These departments will work with Cal EMA and other State-level agencies, such as the California National Guard (CNG). Cal EMSA and CDPH operate under the principles of the recently released Public Health and Medical Emergency Operations Manual.^[39]

California Emergency Management Agency (Cal EMA)

Cal EMA has primary responsibility for coordinating the State's response and liaison between the Federal, OA, and local governments. To assist with coordination, Cal EMA operates the State Operations Center in Mather (Sacramento) and has divided the state into six Mutual Aid Regions. Each Mutual Aid region is composed of a number of OAs (LAC OA is in Region I) and grouped into three Administrative Regions, each with a Regional Emergency Operations Center: the Southern Region (located in Los Alamitos and includes LAC OA); the Coastal Region (located in Oakland), and the Inland Region (located in Mather and collocated with the State Operations Center), as depicted in Figure-8: California Administrative Regions. The Regional Emergency Operations Centers are activated during disaster incidents, reporting to the State Operations Center, and are the primary coordination points for the OA Emergency Operations Centers and, through them, to the local government Emergency Operations Centers.^[2]

Cal EMA coordinates its activities with the Federal Emergency Management Agency's Region IX Office in Oakland, which establishes its Regional Response Coordination Center. The Federal Emergency Management Agency also has established a Southern California Area Field Office in Pasadena, which could be used as the location for the Joint Field Office, which would be established to coordinate the Federal response to a disaster in the LAC OA.^[40]

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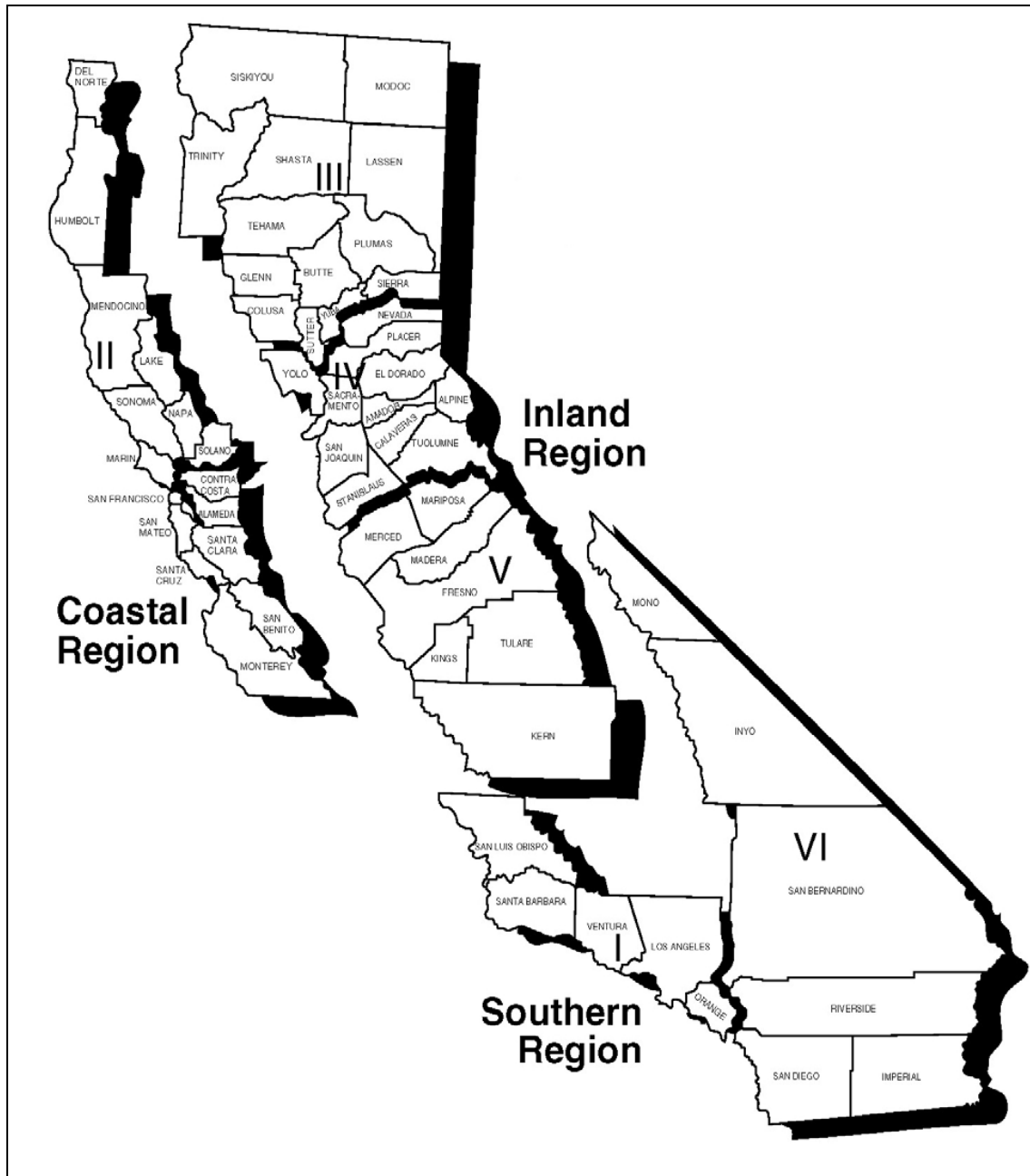


Figure-8: California Administrative Regions

Source:

ⁱCalifornia Public Health and Medical Emergency Operations Manual [Internet]. 2011 July [cited 2011 Oct]. Adapted from: <http://www.emsa.ca.gov/disaster/files/EOM712011.pdf>

California Health and Human Services Agency (CHHS)

The California State Emergency Plan identifies the California Health and Human Services Agency (CHHS) as the lead agency for coordinating emergency activities related to care and shelter and public health and medical services, collectively referred to as State Emergency Function (EF)-8. During an emergency, CHHS may assign primary and support roles among its

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12 departments and one board to address issues related to health care, social services, public assistance, and rehabilitation. Among these subordinate organizations, there are two that have primary responsibilities for disaster medical and public health-related issues, which are the CDPH and Cal EMSA.^[41]

CDPH functions as the lead State agency for public health disaster response and Cal EMSA functions as the lead State agency for medical disaster response, including emergency medical services. In addition to conducting program activities in accordance with statutory and regulatory authorities, CDPH and Cal EMSA conduct operations to support California EF8 response during emergencies. Both CDPH and Cal EMSA operate Duty Officer Programs, which is an emergency notification system operating 24 hours-per-day, 365 days-per-year.^[5]

California executes EF8 through its public health and medical system, which relies upon specific coordination programs that integrate public health and medical activities into the existing emergency management structure. While it includes many public and private partners, the majority of the system's assets are privately owned. During disasters, coordination among public and private partners is essential.^[5]

Just as Cal EMA coordinates with the Federal Emergency Management Agency, California Health and Human Services Agency coordinates with the U.S. Department of Health and Human Services' (HHS) Region IX office, located in San Francisco.^[40] The HHS Region IX has Regional Emergency Coordinators (RECs), who conduct planning for Federal emergency public health and medical response and facilitate coordinated preparedness and response activities for public health and medical emergencies.

The interrelationship of these organizations is depicted in Figure-9: Coordination between Public and Private Partners, which outlines the process of resource requests and assistance during emergencies.

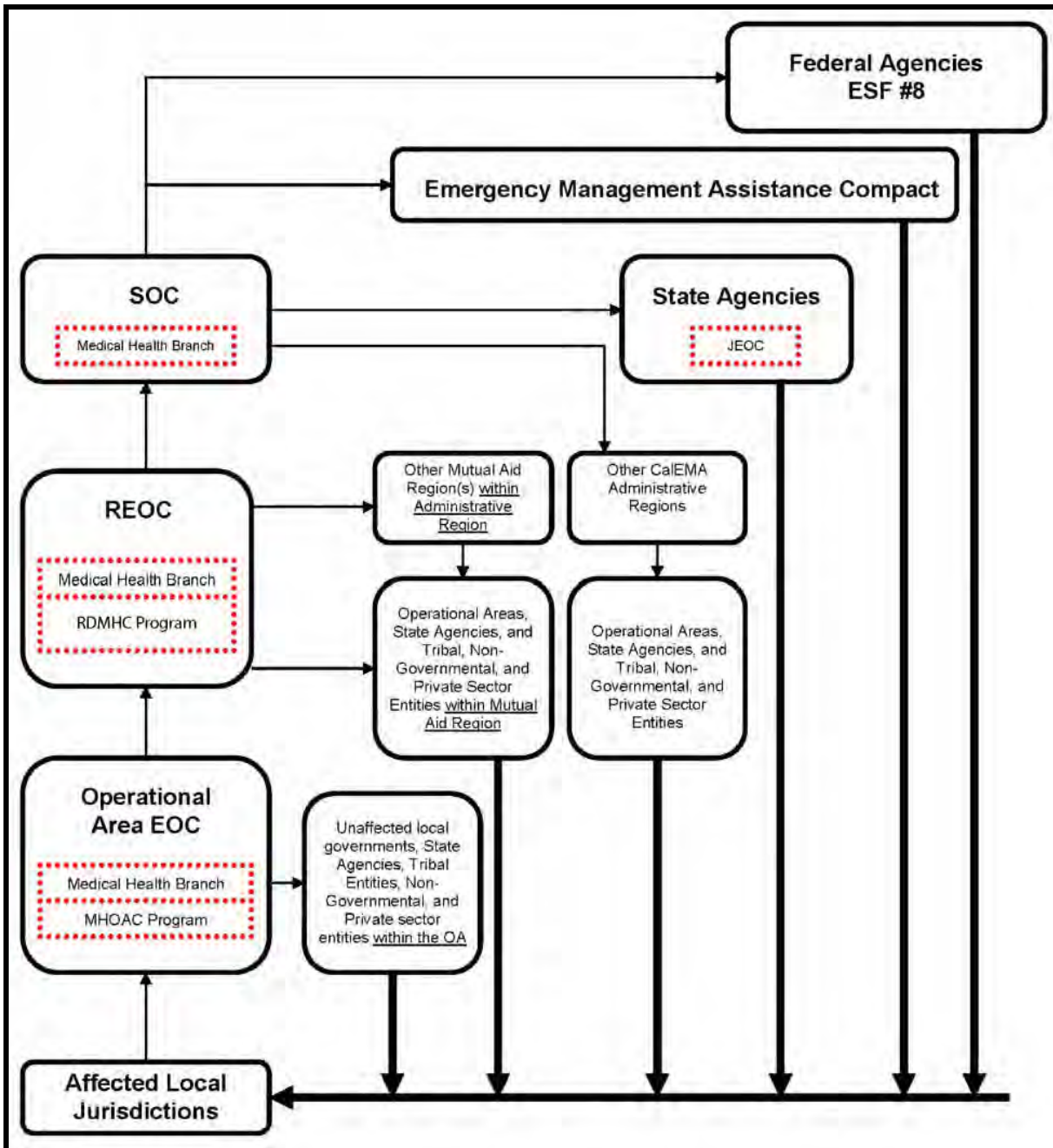


Figure-9: Coordination between Public and Private Partners

Source

California Public Health and Medical Emergency Operations Manual [Internet]. 2011 July [cited 2011 Oct]. Adapted from: <http://www.emsa.ca.gov/disaster/files/EOM712011.pdf>

Table-9: Acronyms included in Figure-9 defines acronyms in Figure-9 not previously mentioned in this paper.

Table-9: Acronyms included in Figure-9	
SOC	State Operations Center
EOC	Emergency Operations Center
JEOC	Joint Emergency Operations Center
RDMHC	Regional Disaster Medical and Health Coordination
MHOAC	Medical Health Operational Area Coordination

The "Federal Agencies" box represents the Joint Field Office and Regional Response Coordination Center, each of which would contain a NRF Emergency Support Function (ESF) #8 (public health and medical services) element. An additional resource is the Joint Regional Medical Planning and Operations Branch – West of the U.S. Northern Command's Surgeon's Office located at Ft. Lewis, WA. This organization provides DoD-related medical expertise within the FEMA Region IX area, working closely with the National Guard senior medical officer and the HHS RECs.^[42]

- **California Emergency Medical Services Authority (Cal EMSA)**
Among their other capabilities, Cal EMSA provides several major response resources in the event of a natural disaster provided through the Disaster Medical Services Division:
 - **Disaster Healthcare Volunteers (DHV):** The Disaster Health Volunteer (DHV) Program is California's Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP) system, a secure, web-based database, which registers and credentials a wide range of health professionals before an emergency or disaster occurs. DHV volunteers are coordinated at the State level by Cal EMSA, and locally by the 58 counties and 43 Medical Reserve Corps (MRC) units. As part of the DHV Program, Cal EMSA coordinates statewide recruitment efforts and ongoing training opportunities, which may concurrently occur with local recruitment and training efforts. During a disaster exceeding local capabilities, Cal EMSA assigns missions, tracks the volunteers, and arranges for their field logistic support needs. As of August 2011, there are over 16,000 persons registered in DHV, of which over 14,000 are health care professionals.^[43] (Mr. M. Frenn, Ms. S. Martin, and Ms. L. Schoenthal, California Emergency Medical Services Authority [Cal EMSA], personal communication, 2011 Jul 11)
 - **California Medical Assistance Teams (CAL-MATs):** The California Medical Assistance Teams (CAL-MAT), a State team not affiliated with Disaster Medical Assistance Teams, are composed of three (as of August 2011) deployable teams supporting specialized health response needs. These are hospital-based teams comprised of clinicians (physicians, surgeons, anesthesiologists, pharmacists, etc.) and administrative staff. A CAL-MAT team is designed for a full-strength complement of 40, but a full-strength CAL-MAT is also capable of fielding two five-person Mobile Response Teams.^[43] (Mr. M. Frenn, Ms. S. Martin, and Ms. L. Schoenthal, Cal EMSA, personal communication, 2011 Jul 11)

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- **Mobile Field Hospitals (MFHs):** Some CAL-MATS may be deployed to staff a Mobile Field Hospital (MFH), which is a deployable medical facility. There are three 200-bed MFHs in California, which are stored in separate secure State-leased warehouses throughout the State, to assist with casualty care in the event of a large-scale disaster. The MFHs are vendor-managed, turn-key acute care hospitals that can be on-site and ready to receive patients within 72 hours of request.^[43] (Mr. M. Frenn, Ms. S. Martin, and Ms. L. Schoenthal, Cal EMSA, personal communication, 2011 Jul 11)
- **Ambulance Strike Teams (ASTs):** Ambulance Strike Teams provide a rapid, organized, and self-sufficient response capability of ambulances and supporting emergency medical personnel to meet emergency medical transportation needs resulting from disasters requiring movement of large numbers of patients. An AST is comprised of five, two-person ambulances of similar type (e.g., Basic or Advanced Life Support) and one leader vehicle. Twenty-six (26) ASTs are currently under contract to Cal EMSA and each team is provided with a Cal EMSA-issued Disaster Medical Support Unit vehicle; an additional 13 Disaster Medical Support Units are planned for purchase in the 2011-2012 timeframe. ASTs provide an immediate Emergency Medical Services operational response to disaster situations, with a focus on transportation, but may also work with other deployed State disaster medical resources.^[43] (Mr. M. Frenn, Ms. S. Martin, and Ms. L. Schoenthal, Cal EMSA, personal communication, 2011 Jul 11)
- **Mission Support Team (MST):** A Mission Support Team provides logistical support as well as coordinated command and control to medical and health resources responding to disasters. The team consists of State, county, and local medical and health professionals, as well as intermittent employees from the private sector. The MST can function as a stand-alone unit or it can work as part of the Incident Command System structure. As of August 2011, Cal EMSA has a roster of 100 individuals who have completed required MST training and could be deployed. Deployment of MSTs is controlled by Cal EMSA; the mission determines the size of the MST, although there are currently four basic MST configurations:
 - Advance (4 persons)
 - Type III (Light) (6 persons)
 - Type II (Medium) (20+ persons)
 - Type I (Heavy) (30+ persons)^[43] (Mr. M. Frenn, Ms. S. Martin, and Ms. L. Schoenthal, Cal EMSA, personal communication, 2011 Jul 11)

California Department of Public Health (CDPH)

The California Department of Public Health (CDPH) is the State of California's Public Health agency. Some public health functions such as licensure and certification of health care facilities; drinking water, and radiologic health are operated at the State level and CDPH staff responds to disasters. Other public health response functions such as control of communicable diseases are primarily addressed by local health departments with CDPH support as needed. (Ms. E. Lyman, California Department of Public Health, personal communication, 2011 Jul 12)

California National Guard (CNG)

The California National Guard (CNG) is headquartered in Sacramento, California. The Governor, either through request by the Adjutant General or Cal EMA assigned EF8 mission tasking, may deploy CNG assets to support incident response and recovery. These personnel can be assigned individually or as part of their unit, depending on the requirements of the specific mission.^[5, 44] (Lt Col S. Pangelinan, California National Guard [CNG], personal communication, 2011 Aug 25)

Collectively, the CNG has over 30 physicians, 70 nurses, and 600 medical technicians able to respond to a disaster. It can provide public health and medical support from California Army National Guard (CA ARNG), California Air National Guard (CA ANG), direct reporting joint (multi-Service) units, and the California State Military Reserve, but only if they are available and not occupied with homeland defense activities.^[45] (Lt Col S. Pangelinan, CNG, personal communication, 2011 Aug 25)

- **California Army National Guard (CA ARNG)**

The California Army National Guard (CA ARNG) contains four units which are capable of providing medical assistance to the victims of a natural disaster; they are: the 40th Brigade Support Battalion, 340th Forward Support Battalion, 749th Combat Support Battalion, and "C" Company, 1st Battalion, 168th Aviation Regiment.^[46]

- **40th Brigade Support Battalion:** The battalion, which is located in Montebello, CA includes "C" (Medical) Company, which consists of 67 personnel, of whom 56 are in medical professional and medical support positions. The company is capable of:
 - Emergency medical treatment and advanced trauma management for wounded, and disease and "non-battle injury" patients
 - "Sick call" services
 - Ground ambulance evacuation
 - Operational dental treatment that includes emergency and essential dental care
 - Limited medical laboratory and radiology services
 - Outpatient consultation services for referred patients
 - Patient holding for up to 20 patients
 - Preventive medicine consultation and support
 - Combat and operational stress control support
 - Mass casualty triage and management
 - Patient decontamination^[47]
- **340th Forward Support Battalion:** The battalion, located in the City of Manhattan Beach, (Los Angeles County), CA includes "C" (Medical) Company, which is organized and provides capabilities similar to that of the 40th.^[48]
- **749th Combat Support Battalion:** The battalion, located in San Mateo, CA, includes the 297th Medical Company (Area Support) (ASMC), which consists of 82 personnel, of whom 64 are in medical professional and medical support positions. The company is capable of:

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- Treatment of patients with disease and minor injuries, triage of mass casualties, initial resuscitation / stabilization, advanced trauma life support, and preparation for further evacuation of ill, injured, and wounded patients who are incapable of being released within 72 hours
- Patient holding for up to 40 patients
- Fielding "Treatment Squads" which are capable of operating independently for limited periods of time
- Emergency medical supply / resupply to units operating within the company's assigned area of operations^[49]
- **"C" Company (Air Ambulance), 1st Battalion, 168th Aviation Regiment:** The company, located at Mather Army Aviation Support Facility in Sacramento, CA, consists of 59 personnel and provides three aeromedical evacuation-configured helicopters.^[49]
- **California Air National Guard (CA ANG)**

The California Air National Guard (CA ANG) contains four wing-sized units that can provide medical assistance. These are: the 144th Fighter Wing, 129th Rescue Wing, 163rd Reconnaissance Wing, and 146th Airlift Wing.^[46]

 - **144th Fighter Wing:** The 144th Fighter Wing, which includes the 144th Medical Group, is located at the Fresno, CA ANG Base. The medical group consists of nine medical professionals and 51 medical support personnel and is primarily tasked with providing internal force health protection and health service support to wing personnel.^[50]
 - **129th Rescue Wing:** The 129th Rescue Wing, located at Moffett Federal Airfield in Santa Clara County, CA, includes the 129th Medical Group, organized similarly to the 144th.^[51]
 - **163rd Reconnaissance Wing:** The 163rd Reconnaissance Wing, located at March Air Reserve Base in Moreno Valley, CA (which is near Los Angeles County), includes the 163rd Medical Group, organized similar to the 144th.^[52]
 - **146th Airlift Wing:** The 146th Airlift Wing, located at Channel Islands Air National Guard Station in Oxnard, CA (which is also near Los Angeles County), includes the 146th Medical Group, organized similar to the 144th, and the 146th Aeromedical Evacuation Squadron which has medical assets of its own to provide medical services to the patients being evacuated.^[53]
- **Direct Reporting Units**

Three units, comprised of CA ARNG and CA ANG personnel are available for public health and medical support; however, natural disaster emergency response is not their primary focus.

 - **9th Civil Support Team (Weapons of Mass Destruction [WMD-CST]):** The team is located in Los Alamitos, CA (which is near Los Angeles County). The team's medical /

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analytical section is made up of four personnel: one Physician's Assistant and one Medical NCO; a Science Officer and Medical Operations Officer.^[54, 55]

- **95th WMD-CST:** The team is located in Hayward, CA and has the same structure as the 9th.^[56]
- **Homeland Response Force (HRF):** To be established during Fiscal Year 2012 (location to be determined), the HRF is anticipated to have a medical component similar to the 45 person section in the CA ANG's current Chemical, Biological, Radiological, Nuclear (CBRN) Enhanced Response Force Package (CERFP), which is sourced from the CA ANG's 144th Medical Group, as well as an Air National Guard Fatality Search and Recovery Team as is also present in a CERFP. (Once activated and certified, the HRF will replace the CERFP within the CA ANG).^[50, 57, 58]
- **California State Military Reserve (CSMR)**
The California State Military Reserve (CSMR) is a volunteer organization authorized under Title 32 of the U.S. Code and established by California's Military and Veteran's Code, the CSMR provides an additional source of qualified medical personnel to augment those available from CA ARNG or CA ANG units.^[59]

Strengths

This case study possesses a number of strengths including strategic use of limited resources (for the most part, this case study was accomplished by a single research associate), choice of methodology, and flexibility with time. This is the National Center's first disaster health workforce case study focusing on how local and State workforce plans may be supported by Federal response and recovery efforts. No applicable precedents or models were identified during preliminary bibliographic research. Professional relationships with contacts in Los Angeles County and support by ASPR staff facilitated data collection in California. They provided a channel into the disaster response community in Los Angeles County and California State leading to well-connected key informants who linked the National Center to additional essential contacts.

Snowball sampling allowed us to make effective and efficient contact with key informants by referral from other informants. Not only was snowball sampling helpful in mapping the actual structure of human resources, it also directly helped discover teams not initially known to investigators. Interviews in the case study were conducted in-person, which increased the quality of data collection. Snowball sampling and in-person interviews provided a broad picture of the disaster response network and comprehensiveness was enhanced. These direct connections facilitated follow-up fact checking during the writing of this case study – this illustrates the quality of this case study.

Significant time (six weeks) was afforded on-scene data collection through snowball sampling and in-person interviews. These methods are somewhat time-consuming as interviewing subsequent informants depended on acquiring their contact information from a previous informant, hampering the ability to pre-schedule interviews. The six weeks available for

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scheduling interviews enabled flexibility with informants' schedules and allowed a greater number of informants to contribute.

Limitations

Several limitations exist within the case study, which were voiced at the National Conference on the Natural Disaster Health Workforce held on September 19-20, 2011 in Washington, DC, which aimed to gather collective knowledge and input on the workforce report.

While the most useful methodology for this initial case study was snowball sampling, some disadvantages exist. First, there is a possibility for sampling bias. Informants are likely to provide referrals to persons they know very well and may not recall or have relationships with other important contacts. Second, there is no control over who is interviewed since it relies solely on the person providing the referral. Third, although many informants were referred multiple times indicating a level of reliability, representativeness of the case study is not guaranteed.^[60]

All data in this case study is the most current at the time of data collection; however, it does not account for double counting and variable data. Natural disaster health professionals may already work in a profession where they are required to respond to natural disasters as a part of their job, but may also belong to other disaster emergency volunteer group(s). As a result, the number of people available to respond to a natural disaster may be overrepresented since they are counted more than once as a natural disaster responder. Data are constantly changing and information collected one day can change the next. The number of people who are available to respond in a disaster emergency can vacillate because people can join or become unaffiliated with a team. Even if data change in real time, it does not account for unavailability of responders due to other priorities such as work or family, becoming victims themselves in the disaster emergency, or encountering structural barriers such as disaster-induced failed infrastructure.

Future Considerations

When conducting future case studies, perhaps sampling methods other than snowball sampling should be considered. Various qualitative methodologies exist and future exploration of a potentially better methodology suiting the needs of the study is needed.

Various professional titles can have different functional capabilities. Two Emergency Medical Service Responders with the title of Emergency Medical Technicians-Basic from different states may be assigned varying degrees of capabilities by the State. One Emergency Medical Technician-Basic can be assigned one capability in one state, but in another is assigned to a higher leveled Emergency Medical Service Responder, such as to an Emergency Medical Technician-Advanced. When considering professional roles in future studies, it may be best to identify professions by capabilities and functions rather than professional titles.

It is important to create a reproducible methodology that can be used for future studies, but this must also be done in conjunction with knowing each study will not be generalizable as each

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locale is unique. Integrating a strong scenario base into the study may be valuable since it provides a structure useful for comparing data across studies.

There are many locations in the United States which would be fruitful areas for future studies of this kind; however, objectively selecting a locale is difficult. The selection methodology for future studies should be carefully scrutinized. Creating a criteria list is a possible approach providing some objectivity and then randomly selecting the locale from a list. Examples of criteria are different disaster scenarios, urban versus rural location, and areas with high population density.

The occupational groups focused on in this case study are narrow. Many other essential occupation groups, such as public health professionals, exist who are contributing to the natural disaster workforce. Future studies should consider broadening the occupational group focus. Also, providing a more detailed workforce profile with availability to respond should be considered for integration in future studies.

Future studies should also consider including additional data, such as reviewing after-action reports for capabilities and capacities, detailing the Emergency Medical Service structure in the location under study, and examining logistical resources. Long-term consideration should also be given to converting the studies into table top exercises.

References

- [1] California Emergency Management Agency. California catastrophic incident base plan: concept of operations. 2008.
- [2] California Emergency Management Agency. Department of Homeland Security, and Federal Emergency Management Agency Region IX, Southern California catastrophic earthquake response plan. 2010.
- [3] Gall M, Gall J, Borg W. Selecting a sample, in educational research. Boston: Allyn and Bacon; 2007.
- [4] State of California. State of California emergency plan [Internet]. 2009 Jul [cited 2011 Aug 9]. Available from: [http://www.oes.ca.gov/WebPage/oeswebsite.nsf/0/79fce3912398fa168825740f0060ce32/\\$FILE/State%20of%20California%20Emergency%20Plan%202009.pdf](http://www.oes.ca.gov/WebPage/oeswebsite.nsf/0/79fce3912398fa168825740f0060ce32/$FILE/State%20of%20California%20Emergency%20Plan%202009.pdf)
- [5] California Department of Public Health and California Emergency Medical Services Authority. California public health and medical emergency operations manual. 2011.

Case Study

- [6] Los Angeles County. About LA County [Internet]. 2011 [cited 2011 Aug 10]. Available from:
http://portal.lacounty.gov/wps/portal/!ut/p/c5/04_SB8K8xLLM9MSSzPy8xBz9CP0os3gLAwgsVvAJMTYw8gm09AsNcDRwDzUCykciy5sEugHIXS1CPU2NjQwCzQjoDgfZh1u_ryF--UBTAyJmEHkDHMDRQN_Plz83Vb8gN8Ig01PXEQCurY5J/dl3/d3/L2dJQSEvUUt3QS9ZQnZ3LzZfODAwMDAwMDAyOExUMzAyTFE5TIVQQTbHSTU!/
- [7] United States Census Bureau. (Los Angeles County) Profile of general population and housing characteristics: 2010. 2010
- [8] Los Angeles County Department of Public Health. About us [Internet]. 2011 [cited 2011 Aug 10]. Available from:
<http://publichealth.lacounty.gov/phcommon/public/aboutus/aboutdisplay.cfm?unit=ph&prog=ph&ou=ph>
- [9] Los Angeles County Department of Health Services. About us home [Internet]. 2011 [cited 2011 Sep 29]. Available from:
http://www.ladhs.org/wps/portal/!ut/p/c1/04_SB8K8xLLM9MSSzPy8xBz9CP0os_hAFz8jl2AXYwN3F2dTAYMXLz9397BgIwMDA_1wkA6zeD9_o1A3E09DQwszV0MDIzMPeyefME-gemOIvAEO4Gig7-eRn5uqX5CdneboqKgIAO9G1uU!/dl2/d1/L2dJQSEvUUt3QS9ZQnB3LzZfUUROMkRTRDMwR0RDNTAyREpOR0dWUzIwMDM!/
- [10] City of Long Beach Department of Health and Human Services. City of Long Beach Health and Human Services [Internet]. 2010 [cited 2011 Oct 20, 2011]. Available from:
<http://www.longbeach.gov/health/>
- [11] City of Pasadena. About the Public Health Department [Internet]. 2011 [cited 2011 Oct 20]. Available from: <http://www.ci.pasadena.ca.us/PublicHealth/>
- [12] California State Legislature. California Law. California Government Code. Chapter 8. Section 3100.
- [13] County of Los Angeles. Volunteer program policy manual. Los Angeles: 2009.
- [14] Beach Cities Health District. Mission and history [Internet]. 2011 [cited 2011 Oct]. Available from: <http://bchd.org/about/mission-and-history/history>
- [15] Los Angeles County Department of Public Health. Emergency preparedness and response program purpose [Internet]. 2011 [cited 2011 Aug 10]. Available from:
<http://publichealth.lacounty.gov/eprp/programpurpose.htm>

Case Study

- [16] Los Angeles County Department of Health Services. FAQ [Internet]. 2011 [Cited 2011 Aug 11]. Available from: http://www.ladhs.org/wps/portal/!ut/p/c1/04_SB8K8xLLM9MSSzPy8xBz9CP0os_hAFz8jl2AXYwN3F2dTAYMXLz9397BgIwMDY6B8pFm8n79RqJuJp6GhhZmroYGRmYeJk0-YJ1C1MQHd4SD78OsHyRvgAI4G-n4e-bmp-gW5EQZZJo6KAIjF-rc!/dl2/d1/L0lDU0NTSUpKZ2tLQ2xFQSEvb01vUUFBSVFKQUFNWXhpbE1RWndYQk00L1lCSkp3NDU0NTAtNUY0a3N0eWp3LzdfUUROMkRTRDMwR0RDNTAyREpOR0dWUzIwVTcvXzd3MWQ5ODEwMDA0Ni9iZl9hY3Rpb24vRkFR/
- [17] Los Angeles County Emergency Medical Services Agency. About EMS [Internet]. 2011 [cited 2011 Oct]. Available from: <http://ems.dhs.lacounty.gov/Home/AboutEMS.htm>
- [18] Los Angeles County Emergency Medical Services Agency. Disaster resource centers. Los Angeles: 2009.
- [19] U.S. Department of Health and Human Services. Hospital preparedness program [Internet]. 2011 Jul 05 [cited 2011 Aug 22]. Available from: <http://www.phe.gov/preparedness/planning/hpp/pages/default.aspx>
- [20] Hanley B (Los Angeles County Emergency Medical Services Agency). Email to Laurie Chow (National Center for Disaster Medicine and Public Health) (lchow@hjf.org) 2011 Oct 4 [cited 2011 Oct].
- [21] Eads J (Los Angeles County Emergency Medical Services Agency). Email to Laurie Chow (National Center for Disaster Medicine and Public Health) (lchow@hjf.org) 2011 Aug 22 [cited 2011 Oct].
- [22] City of Long Beach. City of Long Beach Facts [Internet]. 2011 [cited 2011 August 9]. Available from: <http://www.longbeach.gov/about/facts.asp>
- [23] United States Census Bureau. (City of Long Beach) Profile of general population and housing characteristics; 2010. 2010.
- [24] United States Census Bureau. (City of Pasadena) Profile of General Population and Housing Characteristics; 2010. 2010.
- [25] City of Pasadena. Statistics [Internet]. 2009 [cited 2011 Aug 9]. Available from: http://www.ci.pasadena.ca.us/Pasadena_Statistics/
- [26] United States Census Bureau. (City of Redondo Beach) Profile of general population and housing characteristics; 2010. 2010 [cited 2011 Aug 9].
- [27] United States Census Bureau. (City of Hermosa Beach) Profile of general population and housing characteristics; 2010. 2010 [cited 2011 Aug 9].

Case Study

- [28] United States Census Bureau. (City of Manhattan Beach) Profile of general population and housing characteristics: 2010. 2010.
- [29] City of Hermosa Beach. Demographic information [Internet]. 2011 [cited 2011 Aug 9]. Available from: <http://www.hermosabch.org/about/info/demog.html>
- [30] City of Manhattan Beach. Manhattan Beach Facts [Internet]. 2007 [cited 2011 Aug 9]. Available from: <http://www.citymb.info/index.aspx?page=464>
- [31] City of Redondo Beach. Living in Redondo Beach [Internet]. 2011 [cited 2011 Aug 9]. Available from: http://www.redondo.org/in_the_city/living_in_the_city.asp
- [32] Contreras L (Los Angeles County Fire Department). Email to Laurie Chow (National Center for Disaster Medicine and Public Health) (lchow@hjf.org) 2011 Aug 22 [cited 2011 Oct].
- [33] ReddiNet. ReddiNet [Internet]. 2011 [cited 2011 Aug 23]. Available from: <http://www.reddinet.com/>
- [34] Los Angeles County Department of Health Services. Medical Alert Center [Internet]. 2011 [cited 2011 Aug 23]. Available from: <http://ems.dhs.lacounty.gov/MAC/MAC.htm>
- [35] Citizen Corps. About CERT [Internet]. 2011 [cited 2011 Aug 16]. Available from: <http://www.citizencorps.gov/cert/about.shtm>
- [36] Citizen Corps. Community Emergency Response Team [Internet]. 2011 [cited 2011 Aug 16]; Search list of CERTs (Community Emergency Response Teams)]. Available from: <https://www.citizencorps.gov/cc/listCert.do>
- [37] Citizen Corps. About CERT [Internet]. 2011 [cited 2011 Aug 16]. Available from: <http://www.citizencorps.gov/cert/about.shtm>
- [38] Buddhist Tzu Chi Foundation. 2009 Annual Report. San Dimas; 2009.
- [39] Frenn M (California Emergency Medical Services Authority). Email to Laurie Chow (National Center for Disaster Medicine and Public Health) (lchow@hjf.org) 2011 Aug 27 [cited 2011 Oct].
- [40] Federal Emergency Management Agency. Region IX [Internet]. 2011 [cited 2011 Oct]. Available from: <http://www.fema.gov/about/regions/regionix/>
- [41] California Emergency Management Agency. State emergency plan. Sacramento; 2009.
- [42] U.S. Department of Defense. US Army Northern Command DSCA II Course "Joint Regional Medical Planning and Operations" briefing. 2010.

Case Study

- [43] Frenn M (California Emergency Medical Services Authority). Email to Laurie Chow (National Center for Disaster Medicine and Public Health) (lchow@hjf.org) 2011 Aug 19 [cited 2011 Oct].
- [44] California National Guard. Overview briefing. 2008.
- [45] Pangelinan S (California National Guard). Email to Laurie Chow (National Center for Disaster Medicine and Public Health) (lchow@hjf.org) 2011 Aug 22 [cited 2011 Oct].
- [46] U.S. Department of Defense. National Guard Bureau. State National Guard resources [Internet]. 2011 [cited 2011 Oct]. Available from: <http://www.ng.mil/resources/states.aspx#ca>
- [47] U.S. Department of Defense. U.S. Army field manual (FM) 4-02.6 (The medical company tactics, techniques, and procedures). 2002.
- [48] California National Guard. 340th Forward Support Battalion website [Internet]. 2011 [cited 2011 Oct]. Available from: <http://www.calguard.ca.gov/340thfsb/Pages/default.aspx>
- [49] U.S. Department of Defense. NORAD – USNORTHCOM Surgeon’s Medical Capabilities Smartbook (through Interim Change). 2009.
- [50] California Air National Guard. 144th Fighter Wing Medical Group [Internet]. 2011[cited 2011 Oct]. Available from: <http://www.144fw.ang.af.mil/resources/factsheets/factsheet.asp?id=11543>
- [51] California Air National Guard. 129th Rescue Wing [Internet]. 2011 [cited 2011 Oct]. Available from: <http://www.129rqw.ang.af.mil/>
- [52] California Air National Guard. 163rd Reconnaissance Wing [Internet]. 2011 [cited 2011 Oct]. Available from: <http://www.163rw.ang.af.mil/>
- [53] California Air National Guard. 146th Airlift Wing [Internet]. 2011[cited 2011 Oct]. Available from: <http://www.146aw.ang.af.mil/>
- [54] California National Guard. 9th Civil Support Team [Internet]. 2011 [cited 2011 Oct]. Available from: <http://www.calguard.ca.gov/9cst/Pages/default.aspx>
- [55] Hudoba Jr F (National Guard Bureau). Email to Tim Moriarity (National Center for Disaster Medicine and Public Health) (tmoriarty2@csc.com) 2011 Aug 31 [cited 2011 Oct].
- [56] California National Guard. 95th Civil Support Team [Internet]. 2011[cited 2011 Oct]. Available from: <http://www.calguard.ca.gov/95cst/Pages/default.aspx>
- [57] U.S. Department of Defense. Guard establish eight Homeland Response Force units, in American Forces Press Service. Washington: 2010.

Case Study

[58] U.S. Department of Defense. CBRNE Enhanced Response Force Package Fact Sheet. 2010.

[59] California State Military Reserve. California State Military Reserve [Internet]. 2011 [cited 2011 Oct]. Available from: <http://www.calguard.ca.gov/casmr/Pages/default.aspx>

[60] Castillo JJ. Snowball sampling. Experiment resources [Internet]. 2009 [cited 2011 Oct 7]. Available from: <http://www.experiment-resources.com/snowball-sampling.html>

DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS)

Introduction

The Department of Health and Human Services (HHS) is the Coordinator and Primary Agency of the National Response Framework's (NRF) Emergency Support Function (ESF#8)-Public health and medical services, which provides Federal public health and medical assistance during an all-hazards disaster, emergency, or other designated event.^[1]

Through ESF#8, emergency medical care and public health resources are provided to the affected State, local, tribal, and territorial governments upon a request by proper authority (e.g., a State's Governor). There are 16 Federal agencies, listed in Table-10: ESF#8 Support Agencies, which support ESF#8 activities; included are the Department of Defense (DoD), the Department of Veterans Affairs (VA), Department of Homeland Security (DHS), and the Department of Transportation (DOT), which are also examined in this report.^[1]

Table-10: ESF#8 Support Agencies
Department of Agriculture
Department of Commerce
Department of Defense
Department of Energy
Department of Homeland Security
Department of the Interior
Department of Justice
Department of Labor
Department of State
Department of Transportation
Department of Veterans Affairs
Environmental Protection Agency
General Services Administration
U.S. Agency for International Development
U.S. Postal Service
American Red Cross

Adapted from

^a U.S. Department of Homeland Security. Emergency Support Function #8 – Public health and medical services annex [Internet]. 2008 Jan [cited 2011 Oct]. 16 p. Available from: <http://www.fema.gov/pdf/emergency/nrf/nrf-esf-08.pdf>

The Secretary of HHS is responsible to the President for all Federal public health and medical response, with the Assistant Secretary for Preparedness and Response (ASPR) as the principal advisor to the Secretary. Through the Secretary's Operations Center, HHS directs the Federal effort to provide public health and medical personnel, and assets in response to an all-hazards

event. The Secretary's Operations Center is where the Emergency Management Group coordinates staffing and requests appropriate ESF#8 organizations to activate and deploy their personnel, equipment, and supplies. HHS assists and supports State, local, tribal, and territorial officials in a variety of public health and medical roles through HHS components with their individual missions to provide contamination surveillance, monitor blood supplies, activate the National Disaster Medical System (NDMS), and deploy the Strategic National Stockpile (SNS) and Federal Medical Stations (FMS). HHS also coordinates public health and medical support, patient movement and evacuation, and helps assure food and radiological safety.^[1,2]

HHS is the major provider of medical personnel for direct patient care under ESF#8. Figure-10: HHS Workforce depicts the HHS workforce, which consists of two major components: National Disaster Medical System (NDMS) and the Commissioned Corps of the United States Public Health Service (USPHS). HHS also sponsors two programs supporting civilian volunteer efforts in local communities and States: the Medical Reserve Corps (MRC) and the Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP). Thus, the HHS workforce represents two pools of medical response personnel: Federal employees (intermittent civilians in NDMS deployable teams and uniformed commissioned officers of USPHS) and civilian volunteers.^[2,3]

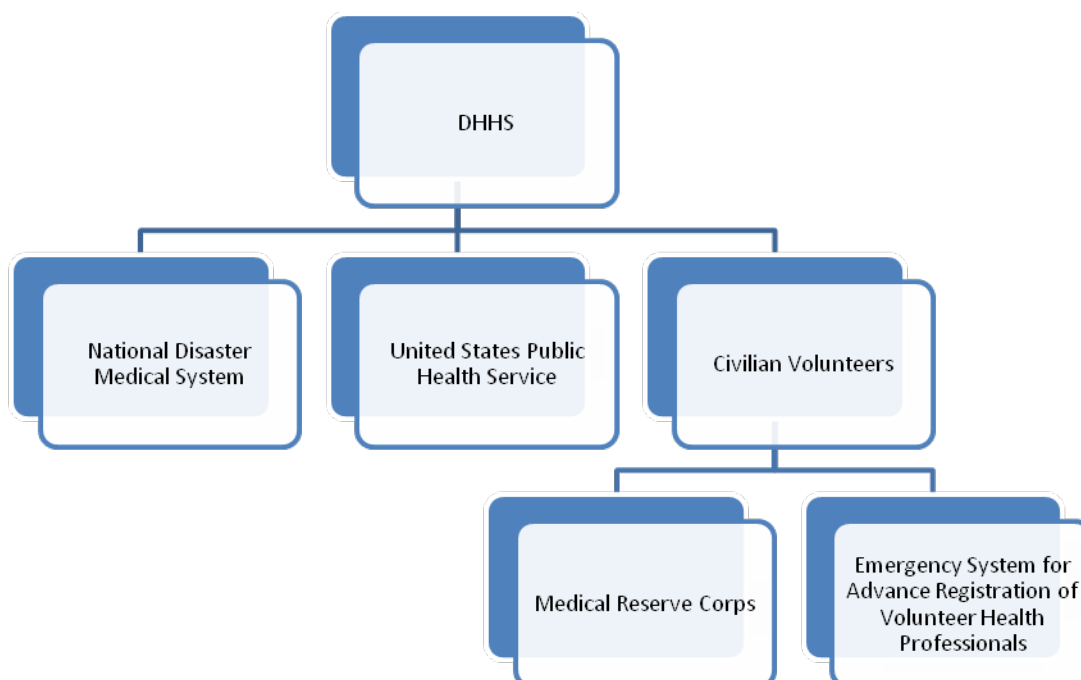


Figure-10: HHS Workforce

Adapted from:

^b Helminiak C (Department of Health and Human Services / Office of the Assistant Secretary for Preparedness and Response). Email to Diana Luan (National Center for Disaster Medicine and Public Health) (diana.luan.ctr@usuhs.mil) 2010 Oct 11 [cited 2011 Oct].

National Disaster Medical System (NDMS)

NDMS is a Federal program formed by elements of four agencies (HHS, DoD, VA, and DHS) tasked to support the management and coordination of medical responses to major emergencies and Federally declared disasters. HHS deployable teams are the first Federal responders for a medical emergency and if additional augmentation is needed, volunteer groups are called upon such as MRC and civilian volunteers.^[3] NDMS works in collaboration with the States, and other public and private entities under the direction of ASPR to provide health and human services during public health emergencies for time-limited periods. NDMS provides deployable Federal medical response teams to augment the Nation's medical response capability and support State, local, tribal, and territorial authorities through three major missions: (1) Provide emergency medical care support; (2) Transport patients from the disaster to definitive medical care locations; and (3) Provide care through a network of civilian NDMS member hospitals.^[3-5]

ASPR has authority and responsibility for NDMS, and coordinates its operations as part of ESF#8. The Federal Emergency Management Agency, part of DHS, supports HHS by developing and distributing NDMS Mission Assignments and operational funds under the Stafford Act. DoD has responsibility for performing NDMS hospital inpatient evacuation at a Federal Coordinating Center (FCC; see the Federal Coordinating Center section), which recruit and maintain hospital participation in NDMS. The U.S. Transportation Command performs DoD's patient movement mission within NDMS with available DoD resources and the Secretary of Defense's approval. NDMS also provides deployable health and medical resources for patient movement and definitive care for hospital inpatients in FCCs within designated Patient Reception Areas, a location where patients are received, triaged, and / or transported to NDMS civilian hospitals for care. VA provides deployable healthcare resources in coordination with DoD and supports NDMS in the provision of definitive care in designated Patient Reception Areas.^[4] (Dr. R. Smith, Department of Veterans Affairs [VA] (Veterans Health Administration [VHA]), personal communication, 2011 Jan 6; Mr. E. Teevan, Department of Health and Human Services [HHS] (National Disaster Medical System [NDMS]), personal communication, Jan 7 2011)

Five deployable NDMS teams exist for emergency medical response:

- Disaster Medical Assistance Team (DMAT)
- Disaster Mortuary Operational Response Team (DMORT)
- National Veterinary Response Team (NVRT)
- International Medical Surgical Response Team (IMSuRT)
- National Medical Response Team (NMRT)^[2,6]

An overview of these teams is listed below in the following tables, elaborating on their purpose, composition, mobilization / deployment, and responsibilities. In addition to deploying an entire registration and training team, individual members or a sub-group of a team (known as a "Strike Team") can deploy as required by the mission needs. (Given its non-domestic nature, the IMSuRT is summarized in Table-13: International Medical Surgical Response Team (IMSuRT), but not further addressed in this report.) (Mr. E. Teevan, HHS [NDMS], 2011 Jan 7)

Although NDMS teams carry State designators (i.e., MA-2), they are Federalized teams composed of medical volunteers working in the Federal, State, local, or private sector. NDMS personnel are hired and trained by Federal, not State entities. The Emergency System for Advance Registration of Volunteer Health Professionals, an emergency volunteer database (see the ESAR-VHP section), is not involved in the recruitment or hiring of NDMS personnel; however, many members are registered and captured in both the Federal NDMS roster and in the volunteer roster.^[1]

Federal guidelines provide training opportunities and fund equipment and training exercises. NDMS provides annual readiness field training, and individual teams conduct their own training as well. DMATs require time to assemble, typically relying on commercial transportation for both equipment and team members arriving at the disaster site within 48 hours after activation. The teams are only equipped to handle small numbers of severely ill patient populations given their standard equipment cache for deployments.^[7] NDMS is strengthening the requirements for readiness, pre-rostering personnel who are most likely ready for deployment if called, and establishing on-call rotation schedules requiring teams to provide a roster with core positions filled with trained and credentialed volunteers. The call schedule ensures teams are prepared for deployment during the month they are scheduled.^[8] (Mr. E. Teevan, HHS [NDMS], 2011 Jan 7)

- **Disaster Medical Assistance Team (DMAT):**

Medical professionals and para-professionals, supported by logisticians and administrative staff constitute the composition of most of the 35-50 member DMATs.^[2,4,9] Their role is to provide medical triage, treatment and preparation for evacuation during a disaster, and to serve as a rapid-response element supplementing local medical care systems until additional resources are mobilized.^[2,9,10] These units are provisioned to self-sustain for 72 hours, and deploy for up to a two-week period.^[2,9] In an evacuation scenario the teams will support the reception and disposition of patients to network hospitals.^[9] Membership is voluntary, and the individuals are required to maintain certifications and licensure within their respective disciplines.^[9] When deployed, the individuals are activated as intermittent Federal employees with medical liability (malpractice) protection under the Federal Tort Claims Act.^[9,11] Currently there are 79 operational DMAT teams.^[11,12] (Mr. E. Teevan, HHS [NDMS], 2011 Jan 7)

- **Disaster Mortuary Operational Response Team (DMORT):**

DMORTs are composed of individuals with expertise in victim identification and mortuary services. These teams provide assistance and personnel to facilitate identification and processing of deceased victims, and to provide family assistance. Composition of the teams can include funeral directors, medical examiners, coroners, pathologists, forensic anthropologists, medical records technicians, finger print specialists, forensic odontologists, dental assistants, x-ray technicians, mental health specialists, computer professionals, administrative support staff, as well as security and investigative personnel. DMORTs are accompanied by three Disaster Portable Morgue Units Teams, the logistics management and mortuary operations team, who stand ready to deploy when needed. There are 11 DMORTs, which includes one weapons of mass destruction decontamination team, and one Family Assistance Center Team, which is a survivor identification team.^[11,12,13] (Mr. E. Teevan, HHS [NDMS], 2011 Jan 7)

• **National Veterinary Response Team (NVRT):**

Veterinarians are an important component to the health of the food supply and the local population during disasters. The five NVRTs are composed of a wide range of professionals who assess the disruption and need for veterinary services.^[12] These teams are composed of veterinarians, veterinary pathologists, animal technicians, microbiologists / virologists, epidemiologist, toxicologists, and other scientific support personnel. The NVRT is capable of assessing and monitoring animals for disease, zoonotic diseases, and public health assessment to assure food and water quality, hazard mitigation, and animal decontamination.^[11,14] (Mr. E. Teevan, HHS [NDMS], 2011 Jan 7)

Table-11: Disaster Medical Assistant Team (DMAT)	
Purpose	<ul style="list-style-type: none"> • Primary & acute care • Triage of mass casualties • Initial resuscitation & stabilization • Advanced life support • Preparation of sick or injured for evacuation
Composition	<ul style="list-style-type: none"> • 35-50 Members / Team <ul style="list-style-type: none"> ▪ Medical Staff (14-19 personnel) ▪ Support Staff (6-8 personnel) ▪ Medical Staging (8 personnel) ▪ Ambulatory Staff (6 personnel) ▪ Team Medical/Rehab (2 personnel) ▪ Forward Response (5-10 personnel) ▪ Command Staff (5-6 personnel) ▪ Logistics (7 personnel)
Mobilization / Deployment	<ul style="list-style-type: none"> • Able to mobilize within 6 hours of notification • Capable of arriving at disaster site within 48 hours • Operates 72 hours without external support
Responsibilities	<ul style="list-style-type: none"> • Establishing initial (electronic) medical record for each patient <ul style="list-style-type: none"> ▪ Including assigning patient unique identifiers to facilitate tracking throughout NDMS

Adapted from:

^c U.S. Department of Health and Human Services. Disaster Mortuary Operational Response Teams [Internet]. 2010 Oct 05 [cited 2011 Oct]. Available from: <http://www.phe.gov/Preparedness/responders/ndms/teams/Pages/dmort.aspx>

^d U.S. Department of Health and Human Services. National Veterinary Response Team (NVRT) [Internet]. 2009 Mar 11 [cited 2011 Oct]. Available from: <http://www.phe.gov/Preparedness/responders/ndms/teams/Pages/nvrt.aspx>

^e Stopford BM. The National Disaster Medical System—America's medical readiness force. Disaster Manag Response. 2005; 3(2): 53-6.

^f Delaney JB. The National Disaster Medical System's reliance on civilian-based medical response teams in a pandemic is unsound. Homeland Security Affairs. 2007; 3(2): 1-9.

^g Toner E, Waldhorn R, Franco C. A National Disaster Medical System for the 21st century. Biosecur Bioterror. 2007; 5(3): 192-3.

^h MITRE. Joint review of National Disaster Medical System (NDMS), consolidated report of recommendations [Internet]. 2008 Apr 28 [cited 2011 Oct]. 230 p. Available from: <http://www.scribd.com/doc/20301049/Joint-Review-of-National-Disaster-Medical-System-NDMS-Consolidated-Report-of-Recommendationsmitre-Ndms>

ⁱ U.S. Department of Health and Human Services. National Disaster Medical System concept of operations [Internet]. 2009 Jul 13[updated 2010 Apr 29; cited 2011 Oct]. Available from: <http://ndms.fhpr.osd.mil/>

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Table-12: Disaster Mortuary Operational Response Team (DMORT)^{c-1}	
Purpose	<ul style="list-style-type: none"> • Provide technical assistance & personnel • To recover, identify, & process deceased victims
Composition	<ul style="list-style-type: none"> • 117 Members / Team <ul style="list-style-type: none"> ▪ Funeral directors ▪ Medical examiners ▪ Coroners ▪ Pathologists ▪ Forensic anthropologists ▪ Medical records technicians ▪ Transcribers ▪ Fingerprint specialists ▪ Forensic odontologists ▪ Dental assistants ▪ X-ray technicians ▪ Other personnel
Mobilization / Deployment	Deployment configurations depend on nature & scope of incident
Responsibilities	<ul style="list-style-type: none"> • Assist local Medical Examiner/Coroner in remain processing & identification • Maintains several Disaster Portable Morgue Units (DPMU) to establish stand-alone morgue operations • Family Assistance Center Team (FACT) for supporting State & local authorities in collection of ante-mortem data for identification • DMORT-WMD single DMORT for processing contaminated human remains

Table-13: International Medical Surgical Response Team (IMSuRT)^{c-1}	
Purpose	Provide surgical & critical care
Composition	<ul style="list-style-type: none"> • 3 Teams <ul style="list-style-type: none"> ▪ East ▪ West ▪ South • 30 Members / Team <ul style="list-style-type: none"> ▪ Trauma Surgeons ▪ General Surgeons ▪ Physician's Assistants ▪ Registered Nurses ▪ Trauma Nurses ▪ Anesthesiologists ▪ EMT-Paramedics ▪ Logistics Specialists
Mobilization / Deployment	<ul style="list-style-type: none"> • 14 day periods <ul style="list-style-type: none"> ▪ Longer until local medical resources recover/supplemented by other organizations
Responsibilities	<ul style="list-style-type: none"> • Primary responsibility is outside continental U.S. to stabilize & prepare victims for medical evacuations back to U.S. • Within U.S., supplement or temporarily replace surgical capability when needed

Table-14: National Veterinary Response Team (NVRT)^{c-i}	
Purpose	Assist assessing extent of disruption & need for veterinary services following major disasters/emergencies
Composition	<ul style="list-style-type: none"> 22-26 Members / Team <ul style="list-style-type: none"> Clinical veterinarians Veterinary pathologists Animal health technicians Microbiologists / virologists Epidemiologists Toxicologists Various scientific & support personnel
Mobilization / Deployment	Deployment configurations depend on nature & scope of incident
Responsibilities	<ul style="list-style-type: none"> Assessing medical needs of animals Medical treatment & stabilization of animals Animal disease surveillance Zoonotic disease surveillance Public health assessments Technical assistance to assure food & water quality Animal decontamination

Table-15: National Medical Response Team (NMRT)^{c-i}	
Purpose	Medical care following nuclear, biological, and /or chemical incident
Composition	<ul style="list-style-type: none"> 4 Teams <ul style="list-style-type: none"> 3 teams made up of DMAT personnel (Intermittent Federal personnel) 1 team (National Capital Region) made up of local volunteers (Not Federal or intermittent Federal personnel) 53 Members / Team <ul style="list-style-type: none"> Composition depends on Mission Assignment
Mobilization / Deployment	<ul style="list-style-type: none"> Deploy within 4 hours
Responsibilities	<ul style="list-style-type: none"> Capable of providing mass casualty decontamination, medical triage, & primary & secondary medical care Stabilize victims for transportation to tertiary care facilities in hazardous material environment

- National Medical Response Team (NMRT):**

The NMRT is primarily concerned with weapons of mass destruction incidents. Though they do not normally respond to natural disaster incidents, it is possible for the team to respond to hazardous material exposure due to natural disasters. There are four teams with 53 people per team. NMRTs are able to deploy within four hours of notification. Each team composition varies depending on the Mission Assignment, but examples of personnel include medical staff, support staff, medical staging, ambulatory staff, team medical / rehabilitation, forward response, command staff, and logistics. Three of the four teams consist of DMAT members who have received additional training and certification in weapons of mass destruction-type decontamination. The fourth team is located in the National Capital Region and is dedicated to the Washington, DC area. The National Capital Region team does not consist of intermittent Federal personnel like the other three teams comprised with DMAT

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members; instead, it is comprised of local fire department and healthcare organization volunteers from the area.^[2,19]

Federal Coordinating Center (FCC)

In addition to the teams, the FCC is another critical element of NDMS. FCCs are DoD or VA Centers whose personnel recruit non-Federal hospitals within a 50-mile radius of the airport or military airfield where NDMS hospital inpatients will likely arrive, and be received and transported to NDMS civilian hospitals for medical care. They also coordinate exercise development and emergency plans with local hospitals. When an FCC is alerted, their responsibility is to collect and report hospital bed availability by medical or surgical specialty and coordinate patient reception operations which includes, but is not limited to: conducting periodic bed reporting; establishing communications with people or elements involved with FCC; and transporting NDMS hospital inpatients to NDMS hospital for care, coordinating financial management, and establishing and disestablishing Patient Reception Areas.^[20,21]

While HHS oversees the FCCs as part of its NDMS leadership role, the capabilities are provided by DoD and VA, who designates some of their medical treatment facilities as FCCs and execute Mission Assignments for FCC staging, activation, and operation. DMATs assist in staffing FCCs. It is also possible for VA to provide staff for other FCCs as needed. As noted earlier, DoD (primarily through U.S. Transportation Command) provides the majority of Federal and NDMS patient movement capabilities, but DHS (i.e., the U.S. Coast Guard) or commercial companies are other possible resources.^[21] (Dr. R. Smith, VA [VHA], personal communication, 2011 Jan 6)

United States Public Health Service (USPHS) Commissioned Corps Response Groups

As of December 2010, USPHS provides 6,589 trained and credentialed public health officers dedicated to protecting the nation's health through public health promotion and disease prevention, supporting efforts to eradicate disease and improving population's health and environment. USPHS officers fulfill leadership, and service roles in State, local, tribal, territorial, and international agencies as well as other uniformed service agencies where public health and medical expertise is required (e.g., the U.S. Coast Guard within DHS) and, in most cases when needed, the additional duty of providing a rapidly deployable national health and medical response. All USPHS officers are required to have basic training in understanding key public health areas and deployment-response activities, basic life support measure proficiency, and maintain professional competency. Table-16: USPHS Professions lists the professions of USPHS officers, such as medicine (e.g., physicians and nurses), allied health (e.g., pharmacists, dentists, dietitians, and therapists), engineering and environmental health, scientific research, and veterinary medicine. The table also provides the frequency and percentage of USPHS officers categorized in each profession as of December 2010.^[11,22-29] (CDR P. Reed, CDR S. Waterman, LCDR D. Smith, CPT D. Beck, Department of Health and Human Services [HHS] (United States Public Health Service [USPHS]), personal communication, 2010 Dec 21)

Table-16: USPHS Professions		
USPHS Professional Category	Number	Percent
Medical (MD, DO)	911	14%
Nurse (RN, Advance practice)	1,568	24%
Health Services Officer- basic sciences, healthcare administration, medical technology, optometry, physicians assistant, social work, other public health specialties	1,213	18%
Pharmacy	1,116	17%
Engineer	427	6%
Environmental Health Officer	371	6%
Dentist	341	5%
Scientist	303	5%
Therapist - occupational, physical, respiratory, speech pathology/audiology	149	2%
Dietician	100	2%
Veterinarian	90	1%
Total Commissioned Officers	6,589	100%

Adapted from:

^jReed P (Department of Health and Human Services / United States Public Health Service). Email to Diana Luan (National Center for Disaster Medicine and Public Health) (diana.luan.ctr@usuhs.mil) 2010 Dec 21 [cited 2011 Oct].

Three levels of emergency response, listed in Table-17: USPHS Emergency Response Tiers, currently exist within USPHS: (1) Tier 1 officers are the first responders to an incident, who will report to a point of embarkation or mobilization within 12 hours; (2) Tier 2 officers will report in 36 hours; and (3) Tier 3 officers will report within 72 hours. There is a fourth tier, comprised of reserve officers, which is still conceptual. Officers rostered to Tier 1 teams (Rapid Deployment Forces, National Incident Support Teams, and Regional Incident Support Teams) have implicit concurrence on the part of their respective agencies for deployability within 12 hours during their on-call month (once within every five month period). Tier 2 officers are also formally rostered on response teams (Applied Public Health Teams, Mental Health Teams, Capital Area Provider Teams, and Services Access Teams) and maintain implicit agency concurrence for deployability within 36 hours during their on-call month (once within every five month period). Tier 3 officers are not rostered on specific teams and do not maintain implicit agency concurrence, but are on-call once within every five month period—their activation requires agency concurrence at the time of deployment. (Total Corps activation by the President and / or Secretary obviates the need for agency concurrence in extreme circumstances.)^[11,22] (CDR P. Reed, CDR S. Waterman, LCDR D. Smith, CPT D. Beck, HHS [USPHS], personal communication, 2010 Dec 21)

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Table-17: USPHS Emergency Response Tiers	
Tier	Available to Report Within
1	12 Hours
2	36 Hours
3	72 Hours
4	(Conceptual Phase - Reserve) TBD

Adapted from:

^kCarmona RH, Darling RG, Knoblen JE, Michael JM, editors. Public health emergency preparedness & response: Principles & practice. Landover: 2010.

The USPHS Commissioned Corps has seven types of response groups. The following tables provide an overview of each USPHS group providing: (1) Number of teams, (2) Number of members per team, (3) Deployment response readiness (tier), (4) Augmentation response pool, (5) On-call status, (6) Deployment availability, (7) Deployment duration, (8) Training, (9) Sub-structure, and (10) Team primary activities. Most teams are scalable to meet the needs of the specific event they respond to. Each group is addressed in more detail following Table HHS-5.^[11,22-29] (CDR P. Reed, CDR S. Waterman, LCDR D. Smith, CPT D. Beck, HHS (USPHS), personal communication, 2010 Dec 21)

Table-18: Rapid Deployment Forces (RDF)	
Number of Teams / Members	5 / minimum 125 per team
Primary Readiness Tier*	1
Augmentation available by Tier*	3
On-Call	1 out of every 5 months
Deployment availability	On-call month
Deployment duration	Not exceed 2 weeks
Training per year	Up to two weeks response team training
Sub-structure	Can divide team in half as needed
Primary activities	<ul style="list-style-type: none"> • Mass care • Point of distribution operation • Medical surge • Isolation & quarantine • Pre-hospital triage & treatment • Community outreach & assessment • Humanitarian assistance • On-site incident management • Medical supplies management & distribution • Public health needs assessment & epidemiological investigations • Worker health & safety • Animal health emergency support

*Refers to table USPHS Emergency Response Tiers

Adapted from:

^j Reed P (Department of Health and Human Services / United States Public Health Service). Email to Diana Luan (National Center for Disaster Medicine and Public Health) (diana.luan.ctr@usuhs.mil) 2010 Dec 21 [cited 2011 Oct].

^k Carmona RH, Darling RG, Knoblen JE, Michael JM, editors. Public health emergency preparedness & response: Principles & practice. Landover: 2010.

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^l United States Public Health Service Commissioned Corps. Rapid Deployment Forces Fact Sheet [Internet]. 2009 [cited 2011 Oct]. Available from: http://ccrf.hhs.gov/ccrf/FactSheets/RDF_Fact_Sheet_FINAL.pdf

^m United States Public Health Service Commissioned Corps. National Incident Support Teams Fact Sheet [Internet]. 2009 [cited 2011 Oct]. Available from: http://ccrf.hhs.gov/ccrf/FactSheets/NIST_Fact_Sheet_FINAL.pdf

ⁿ United States Public Health Service Commissioned Corps. Regional Incident Support Team Fact Sheet [Internet]. 2009 [cited 2011 Oct]. Available from: http://ccrf.hhs.gov/ccrf/FactSheets/RIST_Fact_Sheet_FINAL.pdf

^o United States Public Health Service Commissioned Corps. Applied Public Health Teams Fact Sheet [Internet]. 2009 [cited 2011 Oct]. Available from: http://ccrf.hhs.gov/ccrf/FactSheets/APHT_Fact_Sheet_FINAL.pdf

^p United States Public Health Service Commissioned Corps. Mental Health Teams Fact Sheet [Internet]. 2009 [cited 2011 Oct]. Available from: http://ccrf.hhs.gov/ccrf/FactSheets/MHT_Fact_Sheet_FINAL.pdf

^q United States Public Health Service Commissioned Corps. Capital Area Provider Fact Sheet [Internet]. 2009 [cited 2011 Oct]. Available from: http://ccrf.hhs.gov/ccrf/FactSheets/CAP_Fact_Sheet_FINAL.pdf

^r United States Public Health Service Commissioned Corps. Services Access Teams Fact Sheet [Internet]. 2009 [cited 2011 Oct]. Available from: http://ccrf.hhs.gov/ccrf/FactSheets/SAT_Fact_Sheet_FINAL.pdf

Table-19: National Incident Support Teams (NIST)^{i-r}	
Number of Teams / Members	5 / 72 total
Primary readiness Tier*	1
Augmentation available by Tier*	3
On-Call	1 out of every 5 months
Deployment Availability	On-call month
Deployment duration	Not exceed 2 weeks
Training per year	Up to 2 weeks response team training
Sub-Structure	Can divide team in half as needed
Primary activities	<ul style="list-style-type: none"> • Continual event needs assessment • Support & direction for incoming response assets • Coordination of deployed field assets • Liaison with State, tribal, & local officials • On-site incident management • Response asset health & safety • Demobilization support

*Refers to table USPHS Emergency Response Tier

Table-20: Regional Incident Support Teams (RIST)^{i-r}	
Number of Teams / Members	11 / 12-30 per team
Primary Readiness Tier*	1
Augmentation available by Tier*	-
On-Call	Year-round
Deployment availability	Year-round
Deployment duration	1-3 days; total not to exceed 30 days per year
Training per year	Up to two weeks response team training
Sub-structure	-
Primary activities	<ul style="list-style-type: none"> • Rapid event needs assessment • Support & direction for incoming response assets • Liaison with State, Tribal, & local officials • On-site incident management • Response asset health & safety

*Refers to table USPHS Emergency Response Tiers

Department of Health and Human Services (HHS)

Table-21: Applied Public Health Teams (APHT)^{i-r}	
Number of Teams / Members	5 / 47 per team
Primary Readiness Tier*	2
Augmentation available by Tier*	3
On-Call	1 out of every 5 months
Deployment availability	On-call month
Deployment duration	Not exceed 2 weeks
Training per year	Up to 2 weeks response team training
Sub-structure	Divides into 9 sections
Primary activities	<ul style="list-style-type: none"> • Epidemiology / surveillance • Preventive (medical) services delivery • Environmental public health

*Refers to table USPHS Emergency Response Tiers

Table-22: Mental Health Teams (MHT)^{i-r}	
Number of Teams / Members	5 / 26 per team
Primary Readiness Tier*	2
Augmentation available by Tier*	3
On-Call	1 out of every 5 months
Deployment availability	On-call month
Deployment duration	Not exceed 2 weeks
Training per year	Up to 2 weeks response team training
Sub-structure	Can divide teams in half as needed
Primary activities	<ul style="list-style-type: none"> • Incident assessment & personnel assessment • Screening for suicide risk, acute & chronic stress reactions, substance abuse, & mental health disorders • Supporting development of behavioral health training programs for impacted populations • Specialized counseling & psychological first aid, crisis intervention, & time-limited counseling for serious mental illness and/or substance abuse

*Refers to table USPHS Emergency Response Tiers

Table-23: Capital Area Provider Teams (CAP)^{i-r}	
Number of Teams / Members	5 / 5 per team
Primary Readiness Tier*	2
Augmentation available by Tier*	3
On-Call	1 out of every 5 months
Deployment availability	On-call month
Deployment duration	Not exceed 3 days
Training per year	Up to 2 weeks response team training
Sub-structure	-
Primary activities	<ul style="list-style-type: none"> • First responder & primary care • Basic & advanced life support • Pre-hospital triage & treatment • Point of distribution operation • Medical surge • On-site incident management • Worker health & safety

*Refers to table USPHS Emergency Response Tier

Table-24: Service Access Teams (SAT)^{1-r}	
Number of Teams / Members	5 / 10 per team
Primary Readiness Tier*	2
Augmentation available by Tier*	3
On-Call	1 out of every 5 months
Deployment availability	On-call month
Deployment duration	Not exceed 2 weeks
Training per year	Up to 2 weeks response team training
Sub-structure	Can divide team in half as needed
Primary activities	<ul style="list-style-type: none"> • Needs assessment • Plan development / cultural sensitivity • Advocating / connecting • Clinical care coordination • Continuity / transition management • Psycho-social management • Re-integration • Confidentiality assurance

*Refers to table USPHS Emergency Response Tiers

Table-25: Ready Reserve Corps^{1-r}	
Number of Teams / Members	Conceptual phase
Primary Readiness Tier*	
Augmentation available by Tier*	
On-Call	
Deployment availability	
Deployment duration	
Training per year	
Sub-structure	
Primary activities	

*Refers to table USPHS Emergency Response Tiers

• **Rapid Deployment Forces (RDF):**

RDF provide resources and assistance to State, tribal, and local health authorities in response to ESF#8 and non-ESF#8 public health emergencies. They are prepared to provide:

- Mass care
- Point of distribution operation
- Medical surge
- Isolation and quarantine
- Pre-hospital triage and treatment
- Community outreach and assessment
- Humanitarian assistance
- On-site incident management
- Medical supplies management and distribution
- Public health needs assessment and epidemiological investigations
- Worker health and safety
- Animal health emergency support^[22,23]

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There are five RDF teams, each composed of at least 125 trained, Tier 1 responders. The teams are centered and members are within 200 miles of four locations: two teams in Washington, DC; one team in Atlanta, GA and Raleigh-Durham, NC; one team in Dallas, TX and Oklahoma City, OK; and one team in Phoenix, AZ and Albuquerque, NM. When activated by the HHS Secretary or Assistant Secretary, they are capable of deploying within 12 hours of activation for deployments not exceeding two weeks. If required, the teams can divide into smaller elements. If additional personnel are needed to augment the RDF, they are provided by Tier 3 personnel. RDF members are expected to minimally participate in two weeks response training yearly. Table-26: Professional Response of the RDF lists the professional composition of the RDF, including command, clinical, and public health staff.^[24,23]

Table-26: Professional Response of the RDF		
Command Staff	Clinical Staff	Public Health Staff
Team Leader	Physicians	Disaster Response Engineers
Deputy Team Leader	Nurse Practitioners/Physician Assistants	Environmental Health
Chief Medical Officer	Dentists	Epidemiologists
Safety Officers	Nurses	
Administration Officers	Pharmacists	
Logistics Officers	Food Safety/Nutrition	
Communications Officers	Medical Records	
Liaison Officers	Mental Health Providers	
	Veterinarians	
	Occupational Health/Therapists	

Adapted from:

^kCarmona RH, Darling RG, Knoben JE, Michael JM, editors. Public health emergency preparedness & response: Principles & practice. Landover: 2010.

- **National Incident Support Teams (NIST):**

NISTs provide resources and assistance to State, tribal and local health authorities following a natural disaster or other emergency. They have more administrative nature by offering decentralized support to ASPR and the Emergency Management Group, who manage response to public health and medical threats and emergencies from the Secretary's Operations Center at HHS headquarters in Washington, DC. NISTs assist with:

- Continual event needs assessment
- Support and direction for incoming response assets
- Coordination of deployed field assets
- Liaison with State, tribal, and local officials
- On-site incident management
- Response asset health and safety
- Demobilization support^[11,24]

NIST has five geographic teams, each staffed by 72 Tier 1 officers, within a 30-40 mile radius of a Regional Emergency Coordinator, who is the ASPR representative at the Federal regional level. NISTs are on a rotating schedule where they are on-call once within every five month period and typically only deploy during their on-call month. Depending on the scale of response, NISTs can be divided into smaller units. When activated by the HHS Secretary or Assistant Secretary, NISTs are expected to deploy within 12 hours and for a maximum of two weeks, with augmentation from Tier 3 officers, reporting within 72 hours to support ESF#8 and non-ESF#8 public health emergencies. NIST members are expected to complete up to two weeks of response team training annually.^[11,24]

- **Regional Incident Support Teams (RISTs):**

RISTs provide rapid assessments in addition to initial incident coordination resources and assistance to State, tribal and local health authorities. They also provide:

- Rapid event needs assessment
- Support and direction for incoming response assets
- Liaison with State, tribal, and local officials
- On-site incident management
- Response asset health and safety^[11,25]

There are 11 RISTs with one team aligned to each of the 10 Federal region and the National Capital Region. RISTs are usually composed of 12-30 Tier 1 officers who are deployable year-round during any month, but not to exceed 30 days per year. If needed and dependent on the scale of response, RISTs can be divided into smaller units. When activated by the HHS Secretary or Assistant Secretary, RISTs are expected to deploy within 12 hours for a short-term period of 1-3 days. RIST members are expected to complete up to two weeks of response team training annually.^[11,25]

NISTs and RISTs are distinct teams, but they also provide similar responsibilities:

- Represent ESF#8 in the field
- Operations responsibility for ESF#8
- Perform leadership functions for ESF#8 deployed resources
- Perform liaison functions required of ESF#8
- Administration and finance
- Information technology / communications
- Logistics, planning^[11]

The professional composition, as listed in Table-27: Incident Support Team Positions, of NISTs and RISTs are also similar, which include command, operations, planning, logistical, finance, and administrative positions.

Table-27: Incident Support Team Positions	
Principal Federal Official	Planning Chief
Commander/Emergency Coordinator	<ul style="list-style-type: none"> Deputy Planning Chief
Deputy Commander	<ul style="list-style-type: none"> Planners
Safety Officer	Administration/Finance Chief
Operations Chief	<ul style="list-style-type: none"> Deputy Admin/Finance Chief
<ul style="list-style-type: none"> Deputy Operations Chief 	<ul style="list-style-type: none"> Administrative Personnel
<ul style="list-style-type: none"> Environmental & Mental Health, Medical Liaisons Logistics Chief 	Information Chief <ul style="list-style-type: none"> Communications Specialists IT Personnel
<ul style="list-style-type: none"> Deputy Logistics Chief, Logisticians 	

Adapted from: ^kCarmona RH, Darling RG, Knoben JE, Michael JM, editors. Public health emergency preparedness & response: Principles & practice. Landover: 2010.

- **Applied Public Health Teams (APHT):**

There are five APHTs, which provide resources and assistance to local health authorities if personnel augmentation or replacement is needed. APHTs are designed to provide public health technical expertise and perform assessments providing information on the general public health requirements of the situation. They also augment the local health work force in planning, restoring, and improving public health infrastructure and programs. Their responsibilities are to:

- Provide or augment the essential functions of a public health department
- Integrate into a Commissioned Corps response at any time there is a need
- Conduct activities relating to public health assessments, environmental health, epidemiology, food safety, infrastructure integrity, surveillance, and vector control^[11,26]

Each team has 43-47 Tier 2 officers, who are available to deploy within 36 hours of activation by the HHS Secretary or Assistant Secretary and participate in deployments not to exceed two weeks. APHTs are on a rotating schedule where they are on-call once within every five month period and typically only deploy during their on-call month. APHT members are expected to complete up to two weeks of response team training annually. APHTs are structured to include nine public health specialty sections, listed in Table-28: APHT Specialty Sections, which include command, support, and public health specific sections. The team facilitates communication capability to operate in disaster-affected regions and surroundings. The areas of expertise within the teams include (1) Epidemiology / surveillance, (2) Preventive (medical) services delivery, and (3) Environmental public health.^[11,26]

Table-28: APHT Specialty Sections	
Command Staff	Food Safety
Support	Occupational Safety
Animal and Vector Control	Preventive Medicine
Community Health Education	Water/Waste Water
Disease Surveillance	

Adapted from:

^kCarmona RH, Darling RG, Knoblen JE, Michael JM, editors. Public health emergency preparedness & response: Principles & practice. Landover: 2010.

- **Mental Health Teams (MHT):**

MHTs provide resources and assistance to local health authorities and respond to immediate and mid-term behavioral health issues or needs associated with a disaster or other incident. MHTs collaborate to assess community mental health prevention and treatment needs, and have the capability to provide clinical support and mental health services including effects of stress on patient behavior and providing consultation on maintaining population mental health. They also provide:

- Incident and personnel assessment
- Screening for suicide risk, acute and chronic stress reactions, substance abuse, and mental health disorders
- Supporting development of behavioral health training programs for impacted populations
- Specialized counseling
- Psychological first aid, crisis intervention, and time-limited counseling for serious mental illness and / or substance abuse^[11,27]

There are five MHTs comprised of Tier 2 members who typically deploy as 5-6 person strike teams. They are ready to respond within 36 hours of activation by the HHS Secretary or Assistant Secretary for a maximum of two weeks. MHTs are on a rotating schedule where they are on-call once within every five month period and typically only deploy during their on-call month. MHT members are expected to complete up to two weeks of response training annually. If additional capacity is needed, Tier 3 mental health providers can report within 72 hours. Table-29: Mental Health Team lists the professional composition of the MHTs who provide health screening, diagnosis and treatment.^[11,27]

Table-29: Mental Health Team	
Team Leader	Incident Stress Team Members
• Deputy Team Leader	Psychiatrists
• Liaison Officer	Psychologists
Administrative/Logistic Officer	Social Workers
Information Technology/Communication Personnel	

Adapted from:

^kCarmona RH, Darling RG, Knoblen JE, Michael JM, editors. Public health emergency preparedness & response: Principles & practice. Landover: 2010.

- **Capital Area Provider (CAP) Teams:**

Capital Area Provider (CAP) teams provide medical and public health resources and assistance during planned events and other supported activities in the National Capital Region, as requested and as CAP capabilities are aligned. They also augment the Office of the Attending Physician during designated U.S. Capitol events such as the State of the Union or Presidential Inauguration. CAP primary duties include:

- First responder and primary care
- Basic and advanced life support
- Pre-hospital triage and treatment
- Point of distribution operation
- Medical surge
- On-site incident management
- Worker health and safety^[11,28]

There are five CAP teams comprised of Tier 2 members, who are capable of deploying within 36 hours of activation by the HHS Secretary or Assistant Secretary, but not to exceed three days. CAP teams primarily focus and deploy only within the Washington, DC area. The teams are on a rotating schedule where they are on-call once within every five month period and typically only deploy during their on-call month. CAP members are expected to complete a minimum of two weeks of response team training yearly. Each CAP team includes a physician, nurse, mid-level providers, and pharmacist and has scalable capability dependent on resources needed or requested.^[11,28]

- **Service Access Teams (SAT):**

Services Access Teams (SAT) provide resources and assistance to local health authorities and are primarily concerned with ensuring access to essential services important to the preservation of life and health. They work with the social needs of at risk populations and facilitate the planning and accessing of resources for these populations. Their primary activities and reporting include:

- Needs assessment
- Plan development / cultural sensitivity
- Advocating / connecting
- Clinical care coordination
- Continuity / transition management
- Psycho-social management
- Re-integration
- Confidentiality assurance^[11,29]

SATs are comprised of Tier 2 responders available for deployment within 36 hours of activation by the HHS Secretary or Assistant Secretary for periods not exceeding two weeks.^[24,25] SATs are on a rotating schedule where they are on-call once within every five month period and typically only deploy during their on-call month. SAT members are expected to complete a minimum of two weeks of response team training yearly. SATs are capable of providing augmentation to other deployable USPHS elements, such as for RDF or

MHT teams, or assist in Federal Medical Station operations, and often engage in transporting displaced population and patient repatriation.^[11,29]

- **Ready Reserve Corps:**

Created by the Patient Protection and Affordable Care Act enacted in March 2010, the Ready Reserve Corps will be a new component providing personnel on short notice, similar to other uniformed services' reserve programs. When implemented, it is envisioned that this volunteer uniformed officer component will support both routine public health and emergency response missions and will perform these duties for assigned period of time. Duties may include activation for national emergencies and public health crises or to back-fill critical positions left vacant by deployed Regular Corps officers. It is anticipated that it will be possible to assign Ready Reserve Corps to isolated hardship and medically underserved communities.^[11]

Federal Medical Station (FMS)

A Federal Medical Station (FMS) is a platform providing scalable surge capacity at the regional, State, tribal, and local healthcare level for an all-hazards event. A FMS can also provide medical special needs sheltering, inpatient, non-acute treatment, and support quarantine missions. FMS are adaptable according to available space predefined through Federal, State, local, and private negotiations facilitated by the RECs. To provide a 250-bed capacity, scalable at 50 bed increments, a 40,000 square foot area footprint (e.g., conference center, gymnasium) is needed, which can include an aggregate of multiple buildings. About 48 hours is required from the time of request to the time of delivery turn-around-time within the continental U.S. This may vary depending on unexpected circumstances.^[2,12]

A staff of 200 personnel, with particular emphasis on nursing support, is considered appropriate for a 250-bed FMS.^[30] It is possible to augment the staff with VA personnel, NDMS personnel (primarily DMATs or selected personnel from a team), or MRC and local jurisdiction volunteers. The general staffing structure includes the command, public health, and clinical staff. The command staff includes: 1 Team Leader; 1 Deputy Team Leader; 1 Chief Medical Officer; 2 Safety Officers; 9 Administration; 4 Logistics; 4 Communications; and 2 Liaisons. The public health staff includes: 2 Epidemiologists; 4 Environmental Health; and 2 Disaster Engineers. The clinical staff includes: 8 Physicians; 8 Physician Assistants or Nurse Practitioners; 4 Dentists; 24 Nurses; 8 Pharmacists; 4 Mental Health; 4 Occupational Health; 4 Medical Records; 2 Veterinarians; 2 Laboratory; and 4 Food Safety.

Centers for Disease Control and Prevention (CDC)

The Centers for Disease Control and Prevention (CDC) is a major operating division under HHS. While CDC does not have a direct care role in ESF#8, it manages FMS physical assets and stockpile with the exception of pharmaceuticals, lab equipment, and other items essential to a FMS. CDC has no operational or field control and management of the FMS program, and does not have a direct care role in ESF#8. It also provides technical and epidemiologic assistance before and after a disaster, documenting and quantifying the public health consequences of a disaster, and identifying potential strategies to prevent or subdue disaster consequences.^[12]

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Additionally, it develops and maintains national systems for acute environmental hazard surveillance, rapidly accessing the medical and health care needs of disaster victims immediately after the disaster, and providing epidemiologic and scientific support services to other agencies involved in disaster planning and response. Through its Division of Emergency Operations, CDC serves as a conduit for State public health departments to report identified or potential public health threats.

CDC's main medical response asset is the Strategic National Stockpile (SNS), which is the repository of drugs and medications (i.e., antibiotics; chemical antidotes; antitoxins; life-support medications; IV administration; airway maintenance supplies; and medical / surgical items) for public health emergencies severe enough to cause local medication shortages. It is meant to supplement and re-supply State and local public health agencies when needed. The SNS is free for recipients and typically has enough medication to disperse to several large cities at a given time with packages available to deliver within 12 hour of deployment.^[31] (Note: The SNS Division is also the subordinate CDC element managing the FMS program.)

Civilian Volunteers

HHS sponsors two programs supporting volunteer efforts in local communities and States: the Medical Reserve Corps (MRC) and the Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP). While these are primarily local and State assets, HHS is exploring possibilities to utilize some of these individuals, if needed, for a national catastrophic emergency response. For example, HHS has developed a "Federal Protocol" for the use of civilian volunteers, and is in the process of developing a "volunteer playbook." There are some significant hurdles to the use of civilian volunteers in a Federal response, including appropriate hiring authorities, legal protections, and licensure reciprocity.^[3]

- **Medical Reserve Corps:** The Medical Reserve Corps (MRC) was established by the Office of the Surgeon General, within the HHS Office of the Assistant Secretary for Health, in March 2002. It was subsequently authorized by Congress in the 2006 Pandemic and All-Hazards Preparedness Act.^[32]

The Medical Reserve Corps is a national network of local groups of volunteers committed to improving the health, safety, and resiliency of their communities. MRC volunteers include public health and medical professionals, as well as others interested in strengthening the public health infrastructure and improving the preparedness and response capabilities of their local jurisdiction. MRC units identify, screen, train, and organize the volunteers, and utilize them to support routine public health activities and augment preparedness and response efforts. (CAPT R. Tossato, CAPT B. Austin, Department of Health and Human Services [HHS] (Office of the Civilian Volunteer Medical Reserve Corps [OCVMRC]), personal communication, 2010 Dec 17)

The MRC program started in FY 2002 as a demonstration project and continued through FY 2006 providing start-up grants to 166 communities across the U.S. Many other communities have since established additional MRC units beyond those created as part of the demonstration project. As of June 2011, there are over 940 MRC units in all 50 States, Washington, DC, Guam, Palau, American Samoa, Puerto Rico, and the U.S. Virgin Islands,

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with more than 205,000 volunteers as depicted in Figure-11: MRC Units. (CAPT R. Tossato, CAPT B. Austin, HHS [OCVMRC], personal communication, 2010 Dec 17)

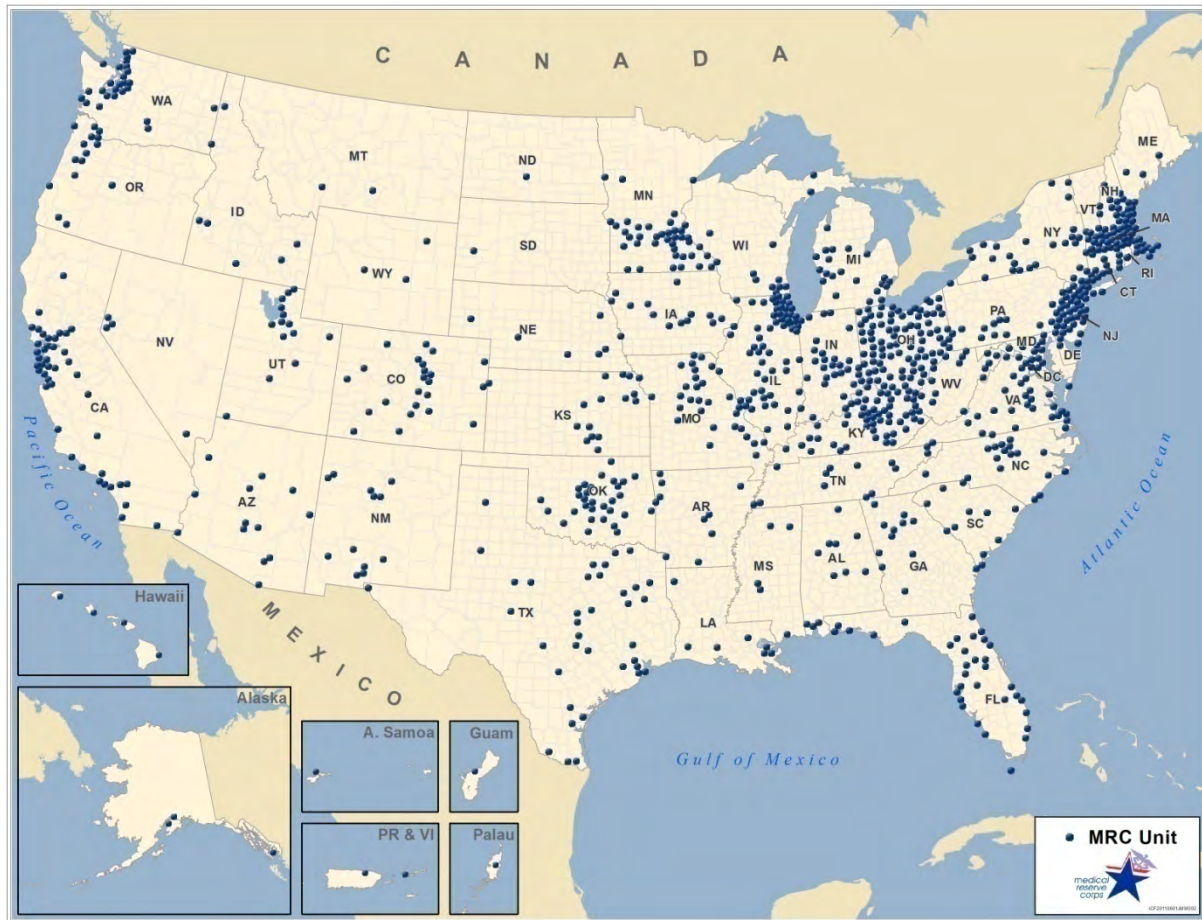


Figure-11: MRC Units

Source:

^sU.S. Department of Health and Human Services. Office of the Civilian Volunteer Medical Reserve Corps. 2009 Annual report [Internet]. 2010 Jul 28 [cited 2011 Oct]. 10 p. Available from: http://www.medicalreservecorps.gov/File/MRC-2009_Annual_Report.pdf

Many jurisdictions have used the MRC to improve public health and prepare for emergencies in their communities. While the MRC provides volunteers with an opportunity to make a difference in the health and safety of those nearest to them, it also fills gaps in both public health initiatives and local preparedness. This has enabled local communities to achieve a higher degree of resiliency and reduced dependence on States and the Federal government during public health emergencies. (CAPT R. Tossato, CAPT B. Austin, HHS [OCVMRC], personal communication, 2010 Dec 17)

MRC units are organized locally to meet the needs in their community. They are encouraged to contribute to local public health initiatives, such as those meeting the Surgeon General's priorities for public health, increase disease prevention, eliminate health disparities and improve public health preparedness. As a community-based program, each MRC is

responsible for determining its own structure and developing its own policies and procedures. MRC units have been established and implemented by local governmental agencies and non-governmental organizations, each with strong partnerships with local medical, public health, emergency management, and other entities vital to their success and sustainability. (CAPT R. Tossato, CAPT B. Austin, HHS (OCVMRC), personal communication, 2010 Dec 17)

The OCVMRC is housed within the Office of the Surgeon General. It functions as a clearinghouse for information and guidance to help communities establish, implement, and maintain MRC units nationwide. Its office activities include strategic planning, intra- and interagency coordination, communications, policy development, program operations, grants management, contract oversight, technical assistance, and deployment operations. (CAPT R. Tossato, CAPT B. Austin, HHS (OCVMRC), personal communication, 2010 Dec 17)

Many members of the MRC are also registered with ESAR-VHP, a health profession volunteer registry, in their State. (CAPT R. Tossato, CAPT B. Austin, HHS (OCVMRC), personal communication, 2010 Dec 17)

MRC volunteers are recruited, trained, and managed at the local level with local and state leadership having priority over any Federal requirements for MRC assets. Specific information regarding the individual units (e.g., detailed volunteer information) is held at the local level, with the Federal level having limited visibility of the MRC volunteer pool, with only views of aggregated data. HHS knowledge of the MRCs is supported by information generated through the MRC Unit Profile, which includes basic unit information, such as the sponsoring organization, unit mission and goals, unit jurisdiction, number of volunteers by general categories, professional status of volunteers (active clinical, inactive with license / certification, retired, student / In-training). It also asks if members are registered in ESAR-VHP, of which approximately 76% (n=706) are currently using or planning to use ESAR-VHP. Additional questions inquire about screening members for meeting basic requirements, ascertaining professional credentials verification, and fitness to serve. One profile question asks if the unit tracks willingness to deploy outside the local jurisdiction, but no data exists to quantify the actual number of individuals willing to volunteer for Federal deployment. (CAPT R. Tossato, CAPT B. Austin, HHS (OCVMRC), personal communication, 2010 Dec 17)

Significant variation exists in the composition, capabilities, and objectives of MRC units. One reason is the dependence on volunteer availability in a geographical location. Also, the selection and training of unit members is determined by the local unit coordinators and the requirements of the local housing and partner organizations needs. Collectively, as depicted in Table-30: Volunteer Composition, MRC volunteer composition is mostly of non-public health / medical professionals (38%), followed by nurses (28%) and physicians (7%). Generally, MRC unit members are not deployed as Federal responders; however, they are conceptually seen as force multipliers -a cadre of personnel available to support and augment the local response. In fact, in several instances (i.e. California wild fires, Kentucky ice storms), the need for deployment of Federal responders was lessened and even negated since local MRC members were available. (CAPT R. Tossato, CAPT B. Austin, HHS (OCVMRC), personal communication, 2010 Dec 17)

Table-30: Volunteer Composition		
Volunteer Type	Number	Percent
Physicians	15,011	7%
Nurses	58,913	28%
Physician Assistants	1,619	1%
Nurse Practitioners	3,453	2%
Dentists	2,018	1%
Mental Health Professionals	8,918	4%
EMS	10,403	5%
Other Public Health/Medical	21,547	10%
Pharmacists	5,087	2%
Non-Public Health/Non-Medical	80,004	38%
Respiratory Therapists	708	<1%
Veterinarians	1,972	1%
Total MRC Volunteers	209,693	100.00%

Adapted from

[†] Tosatto R (Department of Health and Human Services / Office of the Civilian Volunteer Medical Reserve Corps). Email to Laurie Chow (National Center for Disaster Medicine and Public Health) (lchow@hjf.org) 2010 Dec 17 [cited 2011 Oct].

MRC members are encouraged to complete a basic level of competency. Each competency domain is related to specific disaster topics and associated with specific competencies linked to measurable knowledge, skills, and attitudes using suggested training tools. Competencies include: (1) health, safety, and personal preparedness; (2) roles and responsibilities of individual volunteers; and (3) public health activities and incident management.

- **Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP):** The Emergency System for Advance Registration of Volunteer Health Professionals (ESAR-VHP) is a Federal program created to support States and territories in establishing standardized volunteer registration programs for disasters and public health emergencies. The program, administered at the State level, verifies health professionals' identification, licenses, credentials, and hospital privileges in advance of a disaster or public health emergency.^[33]

Within HHS, ASPR has authority and responsibility for ESAR-VHP. ASPR provides funding, technical assistance, and standardized guidance for volunteer recruitment, registration, credential verification, classification according to verified professional credentials, legal and regulatory issues, and policies for the use of volunteers to States and territories.^[34]

There are 62 ESAR-VHP programs in all 50 States, the District of Columbia, U.S. Virgin Islands, Puerto Rico, American Samoa, Guam, Marshall Islands, Micronesia, Northern Marianas, and Palau, as well as Chicago, Los Angeles County, and New York City. With a volunteer pool of almost 180,000, ESAR-VHP has increased and improved the response

capability of States and territories. (Of the approximately 180,000 ESAR-VHP volunteers, approximately 107,000 are MRC members.)^[33, 33]

To make the most effective use of healthcare workers who may have varying levels of clinical competency, ASPR has developed a system of classifying and assigning volunteers into one of four credential levels. The credential level assignment is based on the credentials provided and verified. Table-31: ESAR-VHP Credential Levels provides a basic description of what is required for assignment to each credential level and how volunteers in each level might be used in a disaster.^[34]

Table-31: ESAR-VHP Credential Levels		
Level	Description	Potential Support
1	Hospital Active: Assignment to Level 1 requires confirmation that the volunteer is clinically active in a hospital, either as an employee or by virtue of having hospital privileges. Implicit in this requirement is the ability to practice in a full and unrestricted manner within the State and meet other occupational-specific qualifications.	Hospital Level Care
2	Clinically Active: Assignment to Level 2 requires confirmation that the volunteer is clinically active in any setting other than a hospital (e.g., clinic, private practice, nursing home). Implicit in this requirement is the ability to practice in a full and unrestricted manner within the State and meet other occupational-specific qualifications.	Clinic Level Care
3	Only licensure has been verified: Assignment to Level 3 requires verification of a volunteer's license, certification, or other State requirement to practice. In situations where the State does not govern a profession, requirements that are deemed to be usual and customary for employment in the profession must be verified.	Alternate Care Site, Medical Shelter, First Aid
4	Experience only/education verified (no direct patient care): Assignment to Level 4 requires that the volunteer possess verified documentation of healthcare education or experience. This level may include, but is not limited to, healthcare students or retired healthcare professionals who no longer hold a license. Level 4 classifies individuals who have healthcare experience or education in an area that would be useful in providing basic healthcare not controlled by scope of practice laws to assist clinicians.	First Aid, Shelter Support – no direct patient care

Adapted from:

^u Hannah J (Department of Health and Human Services / Emergency System for Advance Registration of Volunteer Health Professionals). Email to Laurie Chow (National Center for Disaster Medicine and Public Health) (lchow@hjf.org) 2011 Sep 10 [cited 2011 Sep].

ASPR has identified the 20 healthcare occupations depicted in Table-32: ESAR-VHP Volunteer Types it considers critical to providing aid in a disaster and are required to be included in each State and territory's registration system. States and territories may register additional healthcare, public health and non-healthcare occupations beyond this list.^[34]

Table-32: ESAR-VHP Volunteer Types	Number
Physician (MD, DO)	12,465
Advanced Practice Registered Nurse (Nurse Practitioner, Clinical Nurse Specialist, Certified Nurse Anesthetist, Certified Nurse Midwife)	3,180
Registered Nurse	40,688
Licensed Practical Nurse and Licensed Vocational Nurse	5,591
Pharmacist	3,824
Psychologist	990
Clinical Social Worker	2,710
Mental Health Counselor	1,117
Radiologic Technologist and Technician	299
Respiratory Therapist	808
Medical and Clinical Laboratory Technologist	379
Medical and Clinical Laboratory Technician, including Phlebotomist	438
Physician Assistant	1,491
Dentist	1,132
Marriage and Family Therapist	225
Veterinarian	892
Cardiovascular Technologist and Technician	44
Diagnostic Medical Sonographer	28
Emergency Medical Technician and Paramedic	8,855
Medical Records and Health Information Technician	168
Other Healthcare, Public Health, and Non-Healthcare Profession	85,158
Total ESAR-VHP Volunteers	179,811

Adapted from:

^u Hannah J (Department of Health and Human Services / Emergency System for Advance Registration of Volunteer Health Professionals). Email to Laurie Chow (National Center for Disaster Medicine and Public Health) (lchow@hjf.org) 2011 Sep 10 [cited 2011 Sep].

Summary

HHS is the Coordinator and Primary Agency for the NRF's ESF#8.^[1] United States Public Health Service (USPHS) officers mainly fulfill leadership and service roles in State, local, tribal, territorial, and international agencies. When a disaster or emergency occurs, a number of response groups managed by HHS exist to assist. One is the National Disaster Medical System (NDMS), which provides types of response teams and provides medical response to a disaster area, patient movement from a disaster area to an unaffected area, and definitive medical care.^[2,3] The USPHS provides another group composed of seven additional types of health and medical response teams that are available for rapid deployment as needed.^[2,6] There are also civilian volunteers, organized into the MRC and ESAR-VHP. The volunteers typically have careers, unaffiliated with the MRC and ESAR-VHP, in or are retired from the healthcare field and volunteer their expertise to provide assistance during public health and medical emergencies.

References

- [1] U.S. Department of Homeland Security. Emergency Support Function #8 – Public health and medical services annex [Internet]. 2008 Jan [cited 2011 Oct]. 16 p. Available from: <http://www.fema.gov/pdf/emergency/nrf/nrf-esf-08.pdf>
- [2] U.S. Department of Health and Human Services. Medical assistance [Internet]. 2011 Mar 27 [cited 2011 Oct]. Available from: <http://www.phe.gov/Preparedness/support/medicalassistance/Pages/default.aspx#fms>
- [3] Helminiak C (Department of Health and Human Services / Office of the Assistant Secretary for Preparedness and Response). Email to Diana Luan (National Center for Disaster Medicine and Public Health) (diana.luan.ctr@usuhs.mil) 2010 Oct 11 [cited 2011 Oct].
- [4] Yeskey K. Domestic disaster response: FEMA and other governmental organizations. In: Loundbuty D, editor. *Military Preventive Medicine: Mobilization and Deployment*. Washington DC: Borden Institute; 2005. P. 1363-74. (Textbooks of military medicine; vol 2).
- [5] Yeskey K. The key role of NDMS in disaster response. Testimony before the U.S. Senate Committee on Homeland Security and governmental affairs, subcommittee on State, local, and private sector preparedness and integration [Internet]. 2010 Jul 22 [updated 2011 Apr 19; cited 2011 Oct]. Available from: <http://www.hhs.gov/asl/testify/2010/07/t20100722a.html>
- [6] Department of Health and Human Services. National Disaster Medical System (NDMS) Response Teams [Internet]. 2011 [cited 2011 Oct]. Available from: <http://www.phe.gov/Preparedness/responders/ndms/teams/pages/default.aspx>
- [7] Franco C, Toner E, Waldhorn R, Inglesby T, O'Toole T. The National Disaster Medical System: Past, present, and suggestions for the future. *Biosecur Bioterror*. 2007; 5(4): 319-25.
- [8] Helminiak C (Department of Health and Human Services / Office of the Assistant Secretary for Preparedness and Response). Email to Laurie Chow (National Center for Disaster Medicine and Public Health) (lchow@hjf.org) 2011 Jun 29 [cited 2011 Oct].
- [9] U.S. Department of Health and Human Services. Disaster Medical Assistance Team [Internet]. 2010 Oct 21 [cited 2011 Oct]. Available from: <http://www.phe.gov/Preparedness/responders/ndms/teams/Pages/dmat.aspx>
- [10] Gaffney JK, Schodorf L, Jones G. DMATs (Disaster Medical Assistance Teams), respond to Andrew and Iniki. *JEMS*. 1992; 17(11): 76-9.
- [11] Carmona RH, Darling RG, Knoben JE, Michael JM, editors. *Public health emergency preparedness & response: Principles & practice*. Landover: 2010.
- [12] Veitch M, Janisko T. Federal Medical Station Program [audio visual material]. U.S. Department of Health and Human Services.

Department of Health and Human Services (HHS)

- [13] U.S. Department of Health and Human Services. Disaster Mortuary Operational Response Teams [Internet]. 2010 Oct 05 [cited 2011 Oct]. Available from: <http://www.phe.gov/Preparedness/responders/ndms/teams/Pages/dmort.aspx>
- [14] U.S. Department of Health and Human Services. National Veterinary Response Team (NVRT) [Internet]. 2009 Mar 11 [cited 2011 Oct]. Available from: <http://www.phe.gov/Preparedness/responders/ndms/teams/Pages/nvrt.aspx>
- [15] Stopford BM. The National Disaster Medical System—America's medical readiness force. *Disaster Manag Response*. 2005; 3(2): 53-6.
- [16] Delaney JB. The National Disaster Medical System's reliance on civilian-based medical response teams in a pandemic is unsound. *Homeland Security Affairs*. 2007; 3(2): 1-9.
- [17] Toner E, Waldhorn R, Franco C. A National Disaster Medical System for the 21st century. *Biosecur Bioterror*. 2007; 5(3): 192-3.
- [18] MITRE. Joint review of National Disaster Medical System (NDMS), consolidated report of recommendations [Internet]. 2008 Apr 28 [cited 2011 Oct]. 230 p. Available from: <http://www.scribd.com/doc/20301049/Joint-Review-of-National-Disaster-Medical-System-NDMS-Consolidated-Report-of-Recommendationsmitre-Ndms>
- [19] U.S. Department of Health and Human Services. National Disaster Medical System concept of operations [Internet]. 2009 Jul 13[updated 2010 Apr 29; cited 2011 Oct]. Available from: <http://ndms.fhpr.osd.mil/>
- [20] U.S. Department of Homeland Security. Federal Emergency Management Agency. Independent study course #1900 -"NDMS Federal Coordinating Center Operations" [Internet]. 2011 May 24 [cited 2011 Oct]. Available from: <http://training.fema.gov/EMIWeb/IS/is1900.asp>
- [21] U.S. Department of Health and Human Services. National Disaster Medical System Federal Coordinating Center guide [Internet]. 2010 Jun [cited 2011 Oct]. Available from: <http://ndms.fhpr.osd.mil/>
- [23] United States Public Health Service Commissioned Corps. Rapid Deployment Forces Fact Sheet [Internet]. 2009 [cited 2011 Oct]. Available from: http://ccrf.hhs.gov/ccrf/FactSheets/RDF_Fact_Sheet_FINAL.pdf
- [24] United States Public Health Service Commissioned Corps. National Incident Support Teams Fact Sheet [Internet]. 2009 [cited 2011 Oct]. Available from: http://ccrf.hhs.gov/ccrf/FactSheets/NIST_Fact_Sheet_FINAL.pdf
- [25] United States Public Health Service Commissioned Corps. Regional Incident Support Team Fact Sheet [Internet]. 2009 [cited 2011 Oct]. Available from: http://ccrf.hhs.gov/ccrf/FactSheets/RIST_Fact_Sheet_FINAL.pdf

Department of Health and Human Services (HHS)

[26] United States Public Health Service Commissioned Corps. Applied Public Health Teams Fact Sheet [Internet]. 2009 [cited 2011 Oct]. Available from: http://ccrf.hhs.gov/ccrf/FactSheets/APHT_Fact_Sheet_FINAL.pdf

[27] United States Public Health Service Commissioned Corps. Mental Health Teams Fact Sheet [Internet]. 2009 [cited 2011 Oct]. Available from: http://ccrf.hhs.gov/ccrf/FactSheets/MHT_Fact_Sheet_FINAL.pdf

[28] United States Public Health Service Commissioned Corps. Capital Area Provider Fact Sheet [Internet]. 2009 [cited 2011 Oct]. Available from: http://ccrf.hhs.gov/ccrf/FactSheets/CAP_Fact_Sheet_FINAL.pdf

[29] United States Public Health Service Commissioned Corps. Services Access Teams Fact Sheet [Internet]. 2009 [cited 2011 Oct]. Available from: http://ccrf.hhs.gov/ccrf/FactSheets/SAT_Fact_Sheet_FINAL.pdf

[30] Reed P (Department of Health and Human Services / United States Public Health). Email to Laurie Chow (National Center for Disaster Medicine and Public Health) (lchow@hjf.org) 2011 Sep 15 [cited 2011 Sep].

[31] U.S. Department of Health and Human Services. Centers for Disease Control and Prevention: Strategic National Stockpile. 2011 Feb 28 [cited 2011 Oct]. Available from: <http://www.cdc.gov/phpr/stockpile.htm>

[32] U.S. Department of Health and Human Services. Office of the Civilian Volunteer Medical Reserve Corps. 2009 Annual report [Internet]. 2010 Jul 28 [cited 2011 Oct]. 10 p. Available from: http://www.medicalreservercorps.gov/File/MRC-2009_Annual_Report.pdf

[33] U.S. Department of Health and Human Services. Emergency System for Advance Registration of Volunteer Health Professionals. 2011 [cited 2011 Oct]. Available from: <http://www.phe.gov/esarvhp/pages/about.aspx>

[34] Hannah J (Department of Health and Human Services / Emergency System for Advance Registration of Volunteer Health Professionals). Email to Laurie Chow (National Center for Disaster Medicine and Public Health) (lchow@hjf.org) 2011 Sep 10 [cited 2011 Sep].

DEPARTMENT OF DEFENSE (DoD)

Introduction

The congressionally-mandated February 2010 Quadrennial Defense Review identifies "Defend the United States and support civil authorities at home" as one of the six primary missions of the Department of Defense (DoD).^[1] This is performed through two distinct but interrelated functional missions:

- **Homeland Defense (HD)**, the protection of United States sovereignty, territory, domestic population, and critical defense infrastructure against external threats and aggression or other threats as directed by the President.^[2]
- **Defense Support of Civil Authorities ([DSCA], also referred to as Civil Support [CS])**, provides support from Federal military forces, Component assets, DoD civilians or contract personnel, and National Guard forces in response to requests for assistance from civil authorities for domestic emergencies or other domestic activities such as national special security events.^[3] In the case of National Guard forces, the Secretary of Defense (SecDef), in coordination with the Governors of the affected States, elects and requests to use those forces. Figure-12 & 13: Relationship between DoD and other Federal Agencies illustrate the relationship between HD, DSCA (CS), and (the non-DoD mission of) Homeland Security with examples of the types of operations that can take place for each mission and the relationship between DoD and other Federal agencies for each function.

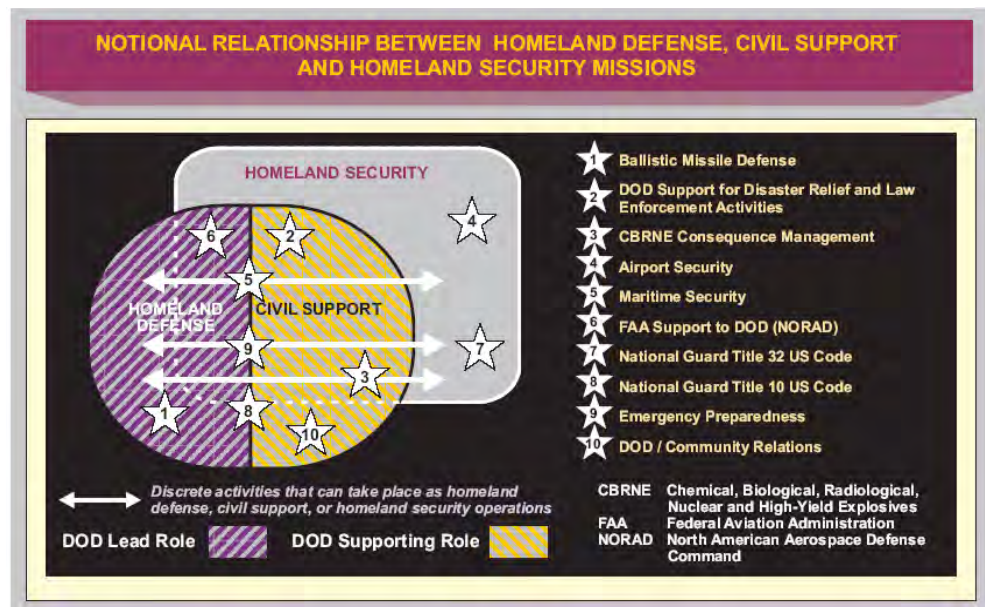


Figure-12: Relationship between DoD and other Federal Agencies 1-2

Adapted from:

^a U.S. Department of Defense. Joint Publication 3-28 (Civil Support) [Internet]. 2007 Sep14 [cited 2011 Oct]. 153 p. Available from: http://www.dtic.mil/doctrine/new_pubs/jp3_28.pdf

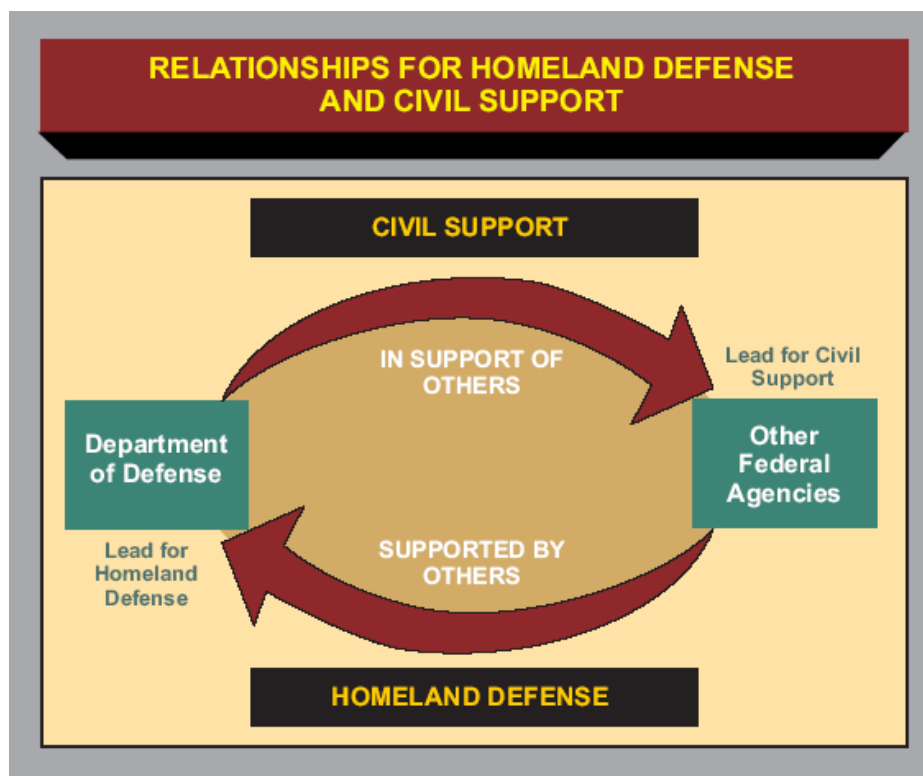


Figure 13: Relationship between DoD and other Federal Agencies 2-2

Adapted from:

^a U.S. Department of Defense. Joint Publication 3-28 (Civil Support) [Internet]. 2007 Sep14 [cited 2011 Oct]. 153 p. Available from: http://www.dtic.mil/doctrine/new_pubs/jp3_28.pdf

While these functions are distinct, some department roles and responsibilities overlap, and operations require extensive coordination between lead and supporting agencies. DSCA is the overarching term for DoD's support to U.S. civil authorities (through DHS / Federal Emergency Management Agency [FEMA] or other Department or Agency, such as the Department of Health and Human Services [HHS]) for domestic emergencies. *(Note: While both CS and DSCA are in current use, DoD has identified DSCA as the preferred term; accordingly it will be the only one used in the remainder of this report.)*

This section of the report will not address HD; rather it will focus specifically on that portion of DSCA delineated by starred item #2 ("DoD support for disaster relief and law enforcement activities") in Figure DoD-1. More specifically, this section applies only to domestic disaster relief operations from the health professions workforce perspective and addresses the support DoD provides Emergency Support Function #8 (ESF#8)-Public Health and Medical Services, as defined by the National Response Framework (NRF). *(Note: the NRF ESF#8 Annex is attached as Appendix A to this report.)*

DoD resource support under the NRF includes personnel, equipment, and supplies in the absence of other national disaster system resource capabilities. DoD provides DSCA when approved by SecDef with the understanding that it will not be in conflict with DoD's primary national security mission, Homeland Defense (HD), or its ability to respond to operational military contingencies.

Statutory, Regulatory, and Directive Authority for DSCA Response

Because of the complexity of the DoD workforce structure, it is important to describe the five titles of U.S. Code governing DSCA response:^[4]

- **Title 10 ("T10")**, which provides the legal basis for the roles, missions, and organization of DoD and each of the Services.
- **Title 32 ("T32")**, which provides the legal basis for the roles, missions, and organization of the National Guard, addressing both its State and Federal nature.
- **Title 42**, specifically Chapter 68, the "Robert T. Stafford Disaster Relief and Emergency Assistance Act" (as amended), known as the Stafford Act, which constitutes the statutory authority for most Federal disaster response activities and provides the framework by which DoD can execute DSCA missions in response to a request from civil authorities. When responding to a natural disaster, DoD will normally be in a supporting role of the lead Federal agency, normally FEMA following a Presidential Disaster Declaration under the Stafford Act.
- **Title 31**, specifically Section 1553 of Chapter 15, the "Economy Act" (as amended), which authorizes Federal agencies to provide fully reimbursable services to another Federal organization or in support of another Federal agency that requests assistance. The Economy Act allows DoD to provide DSCA support to another Federal agency or on its behalf (e.g., HHS as the ESF#8 Coordinator) in the absence of a Stafford Act Presidential Disaster Declaration.
- **Title 50 ("T50")**, specifically Chapter 34, which authorizes a Presidentially-declared "National Emergency," allowing the mobilization of up to one million T10 Reserve personnel under T10, Chapter 1209 (Section 12302) for up to 24 consecutive months in response to events such as the 11 September 2001 attack on the United States. This declaration is normally promulgated by Executive Order or Presidential Proclamation, and as such is a much more robust authority and rarely employed.

DSCA is provided under the authority of the Stafford or Economy Acts upon approval of SecDef.

The National Guard is a key element in DSCA response and it is important to understand how the National Guard can be employed as a State asset and also as a Federal asset for domestic disaster response. Prior to a federal disaster declaration under the Stafford Act, State Governors can employ their National Guard personnel under State Active Duty (SAD). This provides Governors or the Secretary of the Army for the District of Columbia a timely means of providing disaster response, including associated medical capabilities. This authority is codified in State-level statute and is fully funded by the State. Table-33: Military Forces Legal Statuses provides a summary explanation of SAD, T32, and T10 as it affects the National Guard.

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Table-33: Military Forces Legal Statuses			
	State Active Duty (SAD)	Title 32	Title 10
Command and Control	Governor	Governor	President
Location of Duty	In accordance with State law	United States	Worldwide
Funding	State	Federal	Federal
Mission Types	In accordance with State law (riot control, emergencies)	Training and/or other federally authorized missions	Overseas training and other missions as assigned
Military Discipline	State Military Code	State Military Code	Uniform Code of Military Justice (UCMJ)
Support of Law Enforcement	Yes, within authority extended by State law	Yes, within authority extended by State law	In accordance with Posse Comitatus Act
Indemnity	State	Federal	Federal

Source:

^a U.S. Department of Defense. Joint Publication 3-28 (Civil Support) [Internet]. 2007 Sep14 [cited 2011 Oct]. 153 p. Available from: http://www.dtic.mil/doctrine/new_pubs/jp3_28.pdf

Additionally, National Guard units are eligible to respond to a disaster through the Emergency Management Assistance Compact (EMAC), a congressionally-ratified organization administered by the National Emergency Management Association that provides form and structure to interstate mutual aid. Since its ratification and signing into law in 1996 (Public Law 104-321), all 50 States, the District of Columbia, Puerto Rico, Guam, and the U.S. Virgin Islands have enacted legislation to become EMAC members, which enables State-to-State assistance during a Governor-declared state of emergency. Through EMAC, a disaster-impacted State can request and receive assistance from other member States quickly and efficiently. Responding States are assured that sending aid will not be a financial or legal burden, and personnel sent are protected under workers compensation and liability provisions. EMAC legislation addresses the problems of liability and responsibilities of cost and allows for credentials to be honored across State lines.^[5]

Current DoD policy guidance is provided by DoD Directive (DoDD) 3025.18 (DSCA) dated 29 December 2010.^[6]

Organization for Defense Support of Civil Authorities (DSCA) Medical Response

Most DoD medical staff is assigned to hospitals and clinics with a small amount assigned to support the medical needs of deployed or operational units. DoD units created to support DSCA missions are largely focused on Chemical, Biological, Radiological, or Nuclear (CBRN) missions rather than natural disasters.

As depicted in Figure-14: Composition of DoD, for the purpose of this report, the overall structure of DoD is composed of the six major elements depicted in red. Five of these have a

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DSCA medical-related component as tasked by DoDD 3025.18; the sixth element, the Defense Agencies (e.g., the Defense Logistics Agency or Defense Information Systems Agency), will not be addressed in this report, although they often have a supporting role in DSCA operations.^[6]

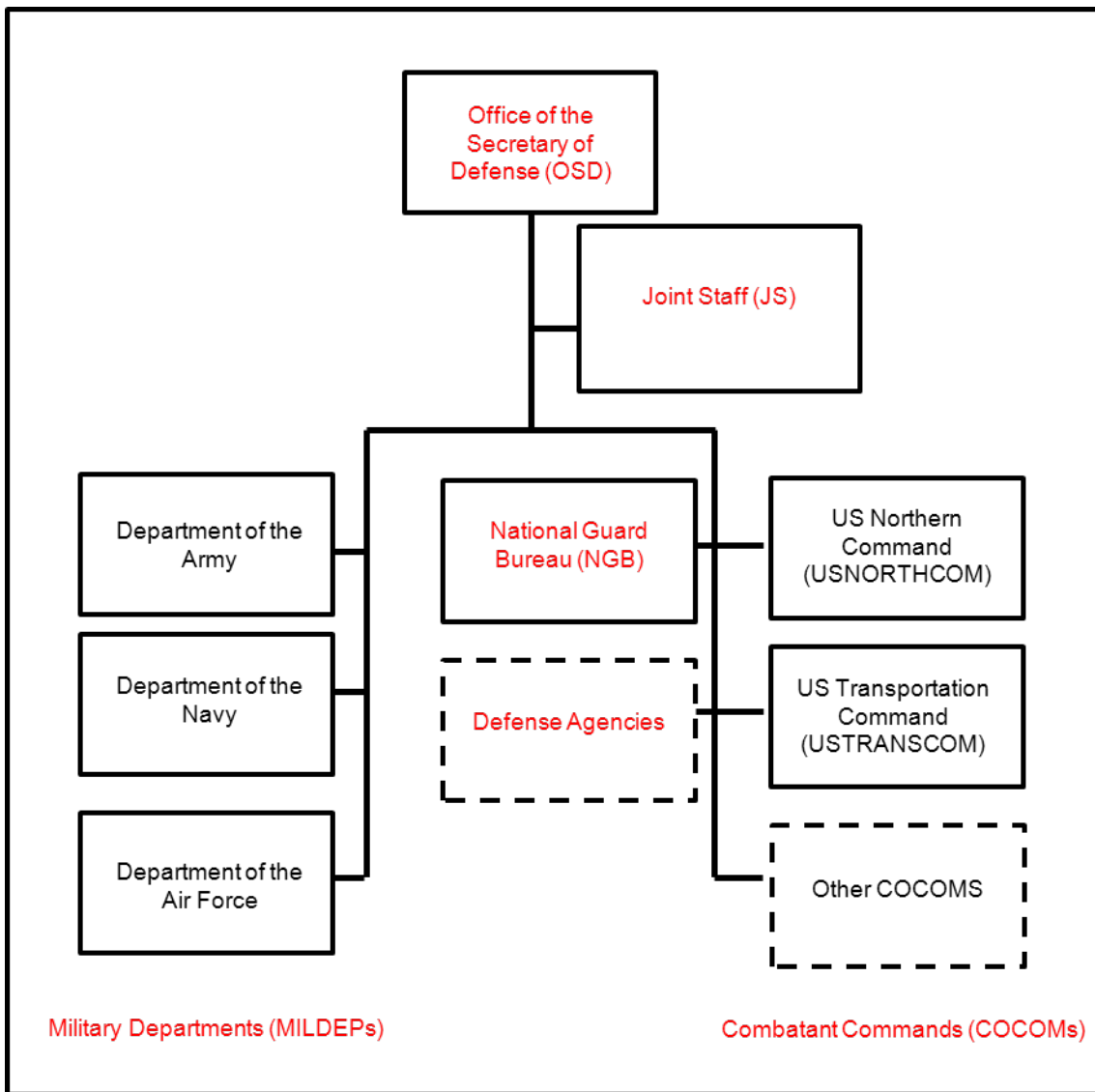


Figure-14: Composition of DoD

Adapted from:

^b U.S. Department of Defense. Department of Defense Directive. Defense Support of Civil Authorities (DSCA) [Internet]. 2010 Dec 29 [cited 2011 Oct]. 17 p. Report number: 3025.18. Available from: <http://www.dtic.mil/whs/directives/corres/pdf/302518p.pdf>

The five elements are:

Office of the Secretary of Defense (OSD), including:

- **Assistant Secretary of Defense (ASD) for Homeland Defense and Americas' Security Affairs (HD&ASA)**, who serves as the principal civilian advisor to SecDef and the Under

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Secretary of Defense (USD) (Policy) for HD, DSCA, and DoD security matters in the Western Hemisphere as specified in DoD Directive (DoDD) 5111.13 dated 16 January 2009.

- **Assistant Secretary of Defense for Health Affairs (HA)**, is the principal advisor to SecDef for all DoD health policy, to include providing medical guidance and support for all domestic crisis situations or emergencies that require health or medical-related DSCA to ASD (HD&ASA), through the Under Secretary of Defense for Personnel and Readiness (USD[P&R]) as specified in DoDD 5136.01 dated 4 June 2008.
- **Assistant Secretary of Defense for Reserve Affairs (RA)**, who, also through the USD(P&R), provides recommendations, guidance, and support on the use of the Reserve Components to perform DSCA missions to the ASD(HD&ASA) in performance of the responsibilities and functions outlined in DoDD 5125.01 dated 27 December 2006.

Joint Staff, including:

- **Joint Director of Military Support (JDOMS [J34], an element of the J3 [Operations] Directorate)**, that serves as the Joint Staff focal point for DSCA, coordinating with the COCOMs, MILDEPs, NGB, and other DoD elements as required.
- **Joint Staff Surgeon**, who provides medical-related advice to the Chairman, the Joint Staff, the COCOMs, and the Services, and coordinates all issues related to operational medicine and force health protection & readiness (FHP&R) among OSD, the individual Service Surgeons General (SGs) within the MILDEPs, and the COCOMs.

Military Departments (MILDEPs [i.e., Departments of the Army, Navy, and Air Force]), each of which establishes the necessary policies and procedures to ensure Service (i.e., Army, Navy, Marine Corps, and Air Force) personnel are trained to execute DSCA plans as directed by SecDef. Each MILDEP has a senior medical officer and Service-level medical command (i.e., Army Medical Department, Navy Bureau of Medicine and Surgery, and Air Force Medical Service), which provide the deployable medical units as well as medical treatment facility (MTF)-based institutional forces for supporting DSCA missions, in addition to providing medical care to military health care eligible beneficiaries. (Of note is the Army Medical Department's DoD Veterinary Service Activity, which provides food protection support to HHS / Food and Drug Administration and animal disease support to the U.S. Department of Agriculture. Additionally, the Army Medical Department is the DoD lead for DSCA medical logistics.)

Each of the four Services has an Active (full-time, or "Regular") and a Reserve (part-time) component (i.e., the U.S. Army, Navy, Marine Corps, and Air Force Reserve [USAR, USNR, USMCR, and USAFR]). Both the Active Duty and Reserve components have their own organic, deployable medical units, as mentioned above, intended primarily to provide care to DoD personnel.

Some DoD MTFs also serve as National Disaster Medical System (NDMS) Federal Coordinating Centers (FCCs) and have entered into Memorandums of Understanding with civilian NDMS

hospitals that accept civilian victims of a domestic or international disaster for medical care as inpatients and can perform immediate response activities as authorized by DoDD 3025.18.^[6]

National Guard Bureau (NGB), a joint activity of the DoD that provides the channel of communications for all matters pertaining to the National Guard between (1) SecDef, the Chairman of the Joint Chiefs of Staff, the DoD Components (including the COCOMs), and the Departments of the Army and Air Force and (2) the States. The primary medical-related advice is provided to the Chief, NGB by the NGB Joint Surgeon, the Army National Guard (ARNG) Surgeon (also part of the Department of the Army command structure), and the Air National Guard (ANG) Surgeon (also part of the Department of the Air Force command structure).

While subordinate to the Governor in their day-to-day role, the 54 State and territory-level National Guard commands are part of the DoD ESF#8 response force since they may be used by SecDef (with the consent of the providing Governor[s]) in providing DSCA. Normally referred to as ARNG / ANG (and collectively as the "National Guard"), in their day-to-day state status but when placed in a Federal (T10) status they become the "Army / Air National Guard of the United States (ARNGUS / ANGUS)."^[7]

In addition to the combat medical units embedded within or organic to most National Guard units, the National Guard has also developed the three types of specialized units and capabilities listed below. Each contains an organic medical element intended for internal, unit-level FHP&R / health service support (HSS).^[8]

While each of these units is CBRN-focused, their readiness status and ability to be rapidly activated in SAD (or EMAC) status provides them the opportunity to be among the first military medical personnel on-scene in response to any type of disaster, providing in-extremis support to the affected population, pending the arrival of additional, more substantial medical resources. These units are:

- **Weapons of Mass Destruction – Civil Support Team (WMD-CST)**, intended to provide initial on-scene response to a CBRN incident. There are currently 57 CSTs consisting of 22 full-time personnel, including a medical / analytical section of four personnel: a Physician's Assistant; a Medical NCO; a Science Officer; and a Medical Operations Office. The two medical personnel assigned provide preventive medicine, medical surveillance and emergency medical care for WMD-CST personnel at the incident site. The Science officer conducts analytical analysis using the unit's mobile analytical laboratory, while the Medical Operations Officer provides information on medical capabilities that exist in the State and has knowledge of other medical assets / sites available for follow-on use.^[9]
- **CBRN Enhanced Response Force Package (CERFP)**, intended to locate and extract victims from a contaminated environment, perform mass patient / casualty decontamination, and provide treatment as necessary to stabilize patients for evacuation. Unlike the CSTs, which are dedicated units of full-time National Guard personnel, the 17 current CERFPs are staffed from existing National Guard units. A CERFP consists of 186 persons, including 45 medical personnel from an ANG medical group.^[10]

- **Homeland Response Force (HRF)**, is in development and intended to increase the focus of CBRN response forces on lifesaving objectives and enhance operational flexibility. Each of the 10 planned HRFs will be hosted by one State in each of the FEMA regions. The core of each HRF is a capability similar to that found in the CERFPs, with each HRF composed of approximately 570 personnel, also including a 45-person medical element, but also containing a more robust command and control and security capability.^[11]

Each of the four Services has a combination of "Regular" and Reserve medical units that are available for DSCA response missions. The "Regular" T10 component is referred to as the "Active Component (AC)" while the T10 Service reserves, ARNGUS, and ANGUS are referred to as the "Reserve Component (RC);" collectively, they are referred to as the "Total Force," as depicted in Figure-15: "Total Force". Part of this "Total Force" response capability includes National Guard units, although they must be placed in Federal T10 or T32 (i.e., ARNGUS or ANGUS) status in order to support a DoD DSCA mission.

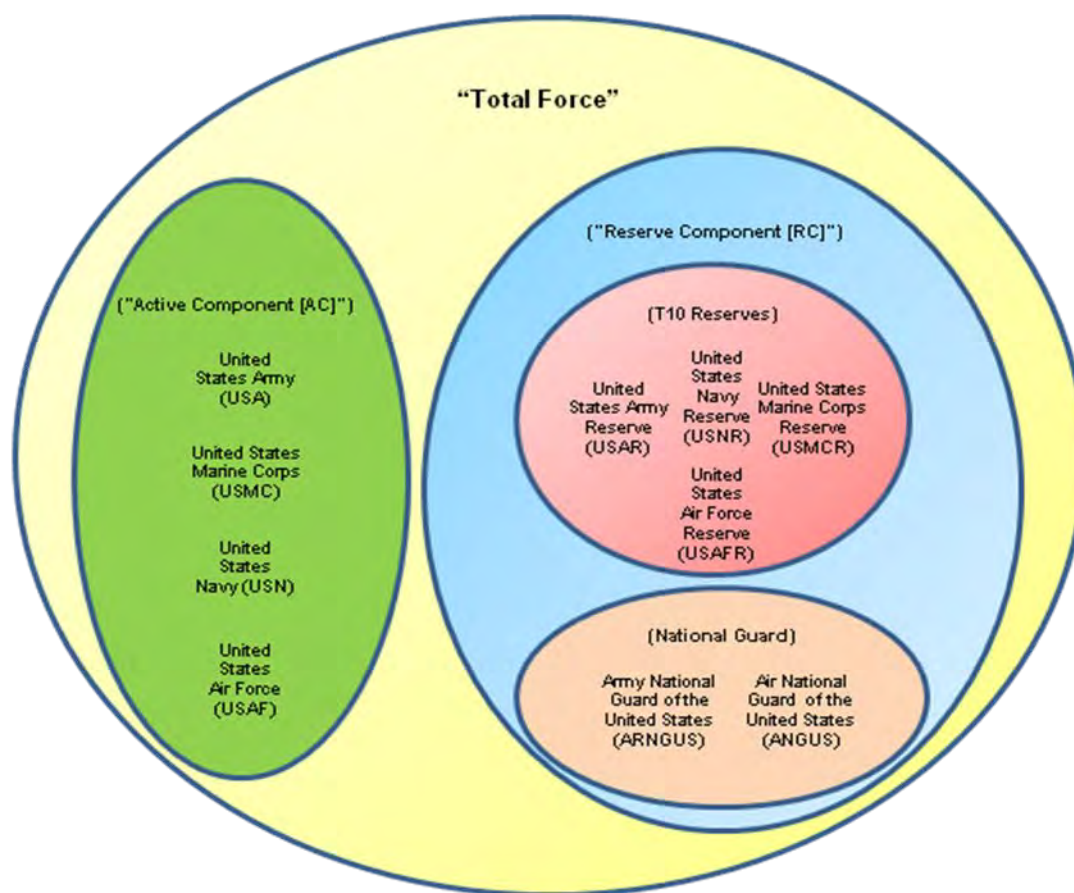


Figure-15: "Total Force"

Currently, T10 Reserve units cannot respond to a non-CBRN event (e.g., a natural disaster) unless a T50 "National Emergency" activation is invoked. Accordingly, T10 Reserve medical units were not considered in the case study, since the disaster was presumed to require a Stafford Act response. There is continuing interest, however, in removing this restriction, allowing both

Active and Reserve T10 medical units to be used as part of the Federal ESF#8 workforce under a Stafford Act disaster declaration.^[12]

Combatant Commands (COCOMs), which, in coordination with Joint Staff, plan and execute DSCA operations within their areas of responsibility. The COCOMs, to include their senior medical officer and Service components, with primary DSCA responsibilities include U.S. Northern Command, U.S. Pacific Command, and U.S. Transportation Command.

- **U.S. Northern Command (USNORTHCOM):** USNORTHCOM does not have a large number of units assigned on a full-time basis. Of those that are, the current and planned units listed below have a disaster response mission primarily focused on a CBRN event rather than a natural disaster. These are:
 - **Joint Task Force – Civil Support (JTF-CS)**, an existing organization consisting of approximately 4,200 AC / RC and civilian personnel that plans and integrates USNORTHCOM support to the designated Primary Agency (normally FEMA) for domestic CBRN response operations. Some typical JTF-CS tasks include coordinating DoD support of casualty medical assistance and treatment, displaced populace assistance, mortuary affairs, logistics, and air operations.^[13]
 - **Defense CBRN Response Force (DCRF)**, a newly formed structure comprised of a total of approximately 5,400 personnel. The DCRF is comprised of the JTF-CS, which serves as the command and control element, and three subordinate Task Forces: Operations, Aviation, and Medical. Missions of Task Force Medical include: casualty decontamination, ground and rotary wing patient evacuation, temporary hospitalization support, alternate medical facilities, patient staging and evacuation, medical logistics, fixed wing patient movement, public health, and health risk assessment / management (e.g., coordinating exposure and medical surveillance and analysis, stress management, veterinary services), and health risk communication. (J. Wireman, Department of Defense [DoD] [U.S. Northern Command], personal communication, 2011 Oct 10)
- **U.S. Transportation Command (USTRANSCOM)**, which is composed of the Army Surface Deployment and Distribution Command (SDDC), Military Sealift Command (MSC), and Air Mobility Command (AMC). Both MSC and AMC provide DSCA medical transportation assets: MSC by providing two hospital ships and AMC by providing strategic Aeromedical Evacuation (AE).

U.S. Pacific Command, which has primary responsibility for DSCA missions within its area of responsibility (AOR), will not be addressed in this report, although they may have a supporting role in U.S. Northern Command DSCA operations.

Concept of DSCA Medical Operations

DSCA medical operations are executed through a process, as outlined in Figure 16: DSCA Medical Operations, whereby Requests for Assistance (RFAs) are submitted to OSD by the Defense Coordinating Officer (DCO), assigned to the FEMA Region who deploys to the FEMA

Joint Field Office (JFO), which is established to coordinate the Federal response. (If the DCO is not yet established at the JFO, RFAs can be submitted directly by an ESF Primary Agency.) An RFA certifies that all other resources have been exhausted and requests a capability, not a specific platform / system, or unit. All RFAs are reviewed and validated by OSD in consultation with the Joint Staff and, as required, NGB and / or the Services. If approved by SecDef, the RFA becomes a Mission Assignment (MA) and is transmitted as an order from SecDef to the appropriate DoD organization.

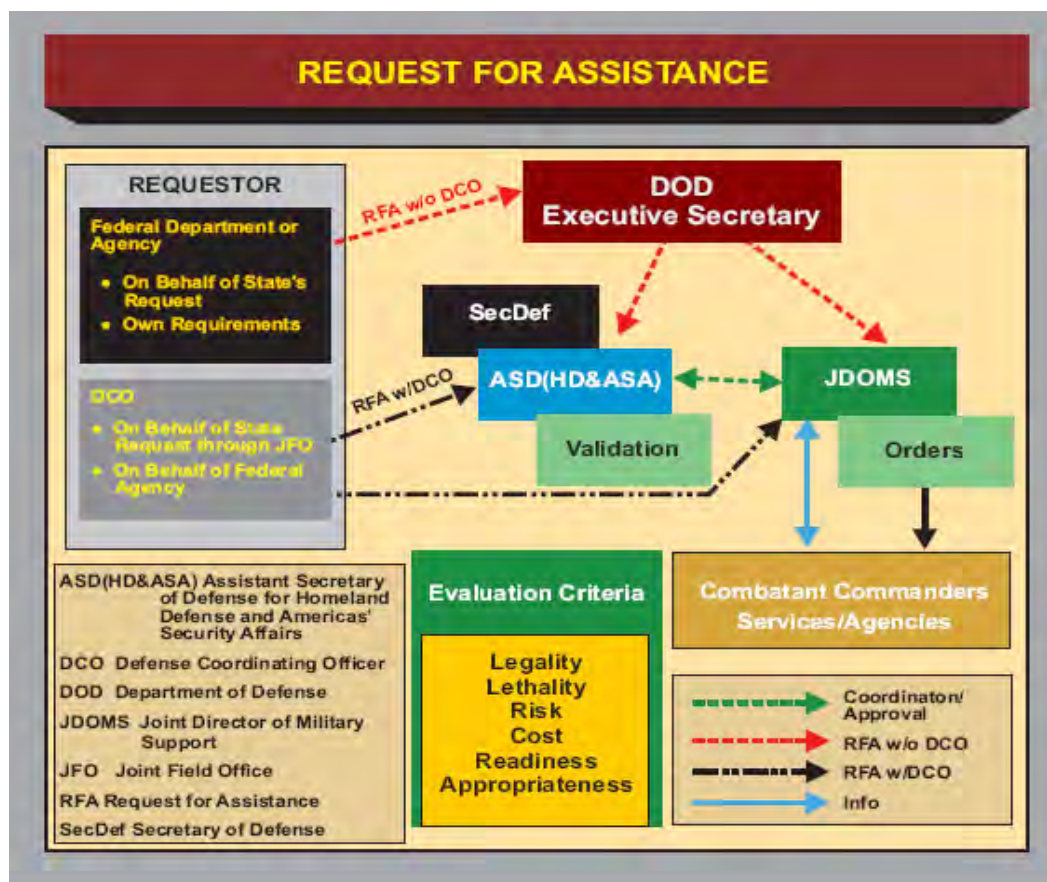


Figure-16: DSCA Medical Operations

Adapted from:

^a U.S. Department of Defense. Department of Defense Directive. Defense Support of Civil Authorities (DSCA) [Internet]. 2010 Dec 29 [cited 2011 Oct]. 17 p. Report number: 3025.18. Available from: <http://www.dtic.mil/whs/directives/corres/pdf/302518p.pdf>

Additionally, USNORTHCOM will deploy one or more Joint Regional Medical Planners to provide the DCO with medical staff expertise and keep the Command Surgeon updated through periodic medical situation reports.

In addition to DoD forces being incorporated into a response via a bottom-up (e.g., disaster scene to SecDef) request process, DoD forces can also be employed in response to a request originating from within the DoD, through a Combatant Commander's Request for Forces (RFF), which identifies a requirement for assistance to meet an un-forecasted requirement that cannot be met by assigned forces. RFFs also require SecDef approval.

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In order to facilitate rapid response and standardize the process of requesting DoD medical assistance, HHS has developed ESF#8 pre-scripted mission assignments (PSMAs) in consultation with FEMA and the Federal Interagency.^[14] These PSMAs provide mutually agreed upon language to expedite deployment of response assets and allow HHS to be proactive in moving personnel and equipment / supplies in anticipation of a disaster declaration. Of the current PSMAs assigned to DoD, six are ESF#8-related, as described in Table 34 DoD ESF#8 Pre-Scripted Mission Assignments. (C. Music, DoD [Office of the Assistant Secretary of Defense (Homeland Defense & Americas' Security Affairs)], personal communication, 2011 Jul 11) All are predicated on the condition that all local, State, and non-DoD national assets (to include the private sector) are exhausted or do not have the capacity to meet the requirement. Importantly, "pre-scripted" does not mean "pre-approved."

Table-34: DoD ESF#8 Pre-Scripted Mission Assignments		
PSMA #	Assignment	Tasking
21	Rotary Wing Medical Patient Evacuation	Provide rotary wing aircraft and personnel for Medical Patient Evacuation in support of disaster operations in response to <i>(incident)</i> in the State of <i>(State)</i> .
22	Temporary Medical Treatment Facilities	Provide deployable DoD temporary MTFs in support of disaster operations in response to <i>(incident)</i> in the State of <i>(State)</i> .
23	Mortuary Affairs	Provide mortuary affairs assistance to the local Medical Examiner / Coroner for remains recovery in support of disaster operations in response to <i>(incident)</i> in the State of <i>(State)</i> .
24	Activate Federal Coordinating Center	Activate Federal Coordinating Center(s) in FEMA Region(s) (number[s]) in support of disaster operations in response to (disaster name / #).
25	Activate Patient Movement (PM) Enablers	Activate DoD / NGB to provide transportation to move cargo and / or passengers by air, rail, marine, or ground, in support of disaster operations in response to (disaster name / #).
26	Aeromedical Evacuation	Activate DoD to provide AE as part of NDMS to provide phased and interdependent NDMS theater patient movement in response to <i>(incident)</i> in the State of <i>(State)</i> .

Adapted from:

^bC. Music, DoD (Office of the Assistant Secretary of Defense [Homeland Defense & Americas' Security Affairs]), personal communication, 2011 Jul 11

All six of these PSMAs are considered significant from a medical workforce perspective, with the first four of special concern to USNORTHCOM and the last two of special concern to USTRANSCOM.

Planning for DSCA medical operations is based on the employment of DoD's public health and medical response capabilities to address DoD-validated RFAs when such a capability cannot be fulfilled at the State level or by the private sector. Planning documents attempt to anticipate the circumstances and conditions that will likely exist when the plan is executed, including availability of power, food, shelter, and key personnel. Among the primary documents prepared through the DSCA planning process are:

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- Joint Chiefs of Staff (JCS) Standing DSCA Execute Order (EXORD)
- USNORTHCOM Concept Plan 3501 (DSCA)
- USNORTHCOM DSCA EXORD
- USTRANSCOM DSCA EXORD
- USTRANSCOM DSCA AE Concept of Operations

Medical Resources for DSCA Operations

The Service medical units listed below have been identified for potential DSCA response.^[15]

Army

- **Forward Surgical Team (FST):** Provides a rapidly deployable, urgent initial surgical service capability including: Emergency treatment to receive, triage, and prepare incoming patients for surgery; provide the required surgery; and continued postoperative care for up to 30 critically wounded / injured patients over a period of 72 hours with its organic Medical Materiel Sets (MMS) as well as surgical team augmentation of other medical units / facilities. The FST is capable of continuous operations in conjunction with a supporting larger medical unit for up to 72 hours, providing urgent initial surgery for otherwise non-transportable patients. It also provides postoperative acute nursing care for up to eight patients simultaneously per team prior to further patient evacuations.
- **Combat Support Hospital (CSH):** Provides hospitalization and outpatient services for all classes of patients, including hospitalization for up to 248 patients in four wards providing intensive nursing care for up to 48 patients and ten wards providing intermediate nursing care for up to 200 patients. In addition to emergency triage and treatment, the CSH contains a surgical capability, based on six operating room (OR) tables which are staffed for 96 operating table hours per day. It also provides consultation services for inpatients and outpatients to include area support for units without organic combat health support services as well as pharmacy, psychiatry, community health nursing, physical therapy, clinical laboratory, blood banking, radiology, and nutrition care services.
- **Early Entry Hospital element (EEHE [44-Bed]):** A subordinate element of a CSH that provides hospitalization services for all classes of patients including hospitalization for up to 44 patients consisting of two wards providing intensive care nursing for up to 24 patients, and one ward providing intermediate care nursing for up to 20 patients. In addition to emergency treatment capability to receive, triage, and prepare incoming patients for surgery, the EEHE contains a surgical capability consisting of general and orthopedic surgery based on two OR tables staffed for 36 operating table hours per day. (This unit also provides OR space and time for operating table hours required by Hospital Augmentation Surgical Teams, if deployed.) It also provides pharmacy and clinical laboratory services to include limited basic microbiology screening, blood banking, and radiology service as well as unit-level FHP&R / HSS for organic personnel.

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- **Hospital Augmentation Element ([HAE] 84-Bed):** A subordinate element of a CSH that augments the EEHE (44-Bed) by providing outpatient specialty clinic services, and 40 intermediate care hospital beds. Its capabilities include: additional hospitalization for up to 40 patients consisting of two wards providing intermediate nursing care as well as consultation and outpatient specialty clinic services for outpatients referred from other medical treatment facilities. It also provides augmentation to company headquarters and supply and services section.

All CSH work areas and assemblages deploy with three days of supply on hand within identified MMS.

- **Area Support Medical Company (ASMC):** Provides FHP&R to units located within its AOR by, among other capabilities, treating patients with disease and minor injuries, triage of mass casualties, initial resuscitation / stabilization, advanced trauma life support, and preparation for further evacuation of ill, injured, and wounded patients who are incapable of returning to duty within 72 hours. The ASMC is also able to provide patient holding for up to 40 patients as well as pharmacy services and multi-shift laboratory / radiological services. Additionally, the ASMC is capable of providing emergency medical supply / resupply to units operating within its AOR and fielding "Treatment Squads" which are capable of operating independently of the ASMC for limited periods of time.

Additionally, the Army can provide Specialized Medical Command (MEDCOM) Response Capabilities (SMRC) teams of personnel that support DSCA activities such as mental health, telemedicine, and disease response. (W. West, DoD [Office of the U.S. Army Surgeon General] personal communication through CDR W. Carroll [Joint Staff Surgeon], 2011 Sep 6)

Air Force

Expeditionary Medical Support (EMEDS) Basic: The EMEDS Basic force module is the first element of EMEDS capability. It provides force health protection, public health / preventive medicine, flight medicine, primary care, emergency medicine and surgery, perioperative care, critical care stabilization, dental care, AE coordination / communication, and patient preparation for transport. It can support a population at risk (PAR) of 1,500-3,000. The complete EMEDS Basic force package is capable of providing care for seven days in an austere environment without resupply. EMEDS Basic has no in-patient capability but is equipped to hold up to four patients for up to 24 hours. Patient evacuation within 24 hours is critical to mission success. Patients requiring priority / urgent AE will be scheduled for movement in accordance with theater AE policy. Blood storage, collection, and transfusion capability is limited. (Maj J. Langevin, DoD [U.S. Transportation Command {on behalf of U.S. Air Force Air Combat Command}], personal communication 2011 Aug 29)

- **EMEDS+10:** When combined with EMEDS Basic, this increment provides prevention, acute intervention, primary care, and dental services to support a PAR of 3,000-5,000. The EMEDS+10 has ten inpatient beds and is capable of providing medical and dental care for seven days in an austere environment without medical re-supply. The ten beds provide complex medical / surgical inpatient capability consistent with the evacuation policy

determined by the supported COCOM. The core infrastructure provides additional ancillary support, medical equipment maintenance, and facility management. Blood storage, collection, and transfusion capability is limited.

- **EMEDS+25:** When combined with EMEDS Basic and EMEDS +10, this increment provides prevention, acute intervention, dental services, and primary care to support a PAR of 5,000-6,500. The EMEDS+25 has 25 inpatient beds and is capable of providing medical and dental care for seven days in an austere environment without medical re-supply. The 25 beds provide complex medical / surgical inpatient capability consistent with the evacuation policy determined by the supported COCOM. EMEDS+25 provides the core infrastructure for specialty (i.e., critical care, gynecology, otorhinolaryngology, neurosurgery, oral surgery, ophthalmology, thoracic / vascular surgery, urology, mental health triage, and combat stress management).

These units require base operating support for such things as electricity, water, and many other considerations

The Air Force is also currently developing an EMEDS Health Response Team (EMEDS-HRT) to provide rapid deployable modular patient care for humanitarian assistance and disaster relief. (Maj J. Foltz, DoD [Office of the U.S. Air Force Surgeon General], personal communication, 2011 Aug 29)

- **Critical Care Air Transport Team (CCATT):** Assists in carrying out the AE mission, which includes air transport of patients under medical supervision while delivering optimal care. CCATTs serve as a distributive MTF. They provide medical care after the patient has received essential, stabilizing care by other medical entities such as civilian hospitals or Army field hospitals. CCATTs are able to continuously monitor and maintain stabilization of critically ill / injured / burned patients during transport of the patient in flight. Prior to transport, the role of the CCATT is to prepare the critically ill patient for the flight. The CCATT will normally accompany the patient from the originating medical facility to the aircraft and continue to monitor and intervene during in-flight operations as required. This team does not routinely provide primary stabilization and does not replace forward surgical or ground medical support team capabilities.
- **Contingency Aeromedical Staging Facility (CASF):** One of the ground expeditionary components of the AE mission, the CASF provides personnel and equipment necessary to care for, transport to aircraft, and administratively process patients transiting the AE system. They provide a patient holding and transfer capability. The CASF coordinates and communicates with medical and AE elements to accomplish patient care, staging, and patient movement, including ground transportation of patients in the AE system. The CASF personnel package is customized depending on nature and size of mission requirement. CASFs are built in modular and, if necessary, incremental fashion to form Staging Facilities of 25-, 50-, 100- and 250-bed configurations. The CASF provides an initial rapid-response capability to operate a staging facility for 24-hour 7-day / week operations. Critically ill patients will be cared for at either the nearest MTF facility with required capability or on a short-term basis by CCATTs at the CASF location for patients awaiting airlift. CASF

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personnel provide nursing care and administration processing for all patients traveling in the AE system during emergency conditions or contingency operations.

- **Mobile Aeromedical Staging Facility (MASF):** A smaller and more temporary patient holding and transfer capability compared to the CASF, the MASF is designed to provide forward support with the smallest footprint and contains sleeping tents to provide some operating support for deployed personnel. The MASF includes a capability to receive patients, provide supportive patient care, and meet administrative requirements on the ground while awaiting AE. CCATTs can be assigned to forward-based MASFs to enhance rapid evacuation. The MASF is equipped and staffed for routine processing of 40 patients every 24 hours, usually holding patients up to ten hours. Because it has no beds, patients remain on the litters provided by the originating facility.

Disaster Aeromedical Staging Facility (DASF): Created by adding a CASF nursing personnel package to a MASF, the DASF is a 43-person, temporary AE staging facility that supports rapid response patient staging, limited holding and supports civil disaster response operations and will optimally operate out of existing buildings of opportunity. The DASF is equipped and staffed with patient care and support personnel for a throughput planning factor of 140 patients in a 24-hour period with a maximum 1-2 hour patient hold time. (Maj J. Langevin, DoD [U.S. Transportation Command {on behalf of U.S. Air Force Air Combat Command}], personal communication 2011 Aug 29)

Navy

- **Mercy-Class Hospital Ship (T-AH):** Operated by MSC, these two CONUS-based ships are primarily intended to provide emergency afloat or pier-side hospital level care, including advance inpatient critical and surgical care. They each contain 12 fully-equipped ORs, over 500 hospital beds (almost half the beds are top bunks), digital radiological services, a medical laboratory, a pharmacy, an optometry lab, a Computerized Axial Tomography (CAT)-scan capability, and two oxygen producing plants. Each ship is equipped with a helicopter deck capable of landing large military helicopters. The ships also have side ports to take on patients at sea. These ships conform to the Geneva Convention as hospitals.
- **Amphibious Assault Ship (Tarawa-Class [LHA] and Wasp-Class [LHD]):** Primarily intended to land and sustain Marines once ashore, these nine CONUS-based ships (two LHA / seven LHD) can be tasked as part of a DSCA response force. Their Medical Departments provide primary health care and emergency capabilities to the ship's crew and embarked personnel. Medical elevators rapidly transfer casualties from the flight deck and hangar bay to the medical facilities.
 - The LHA provides four ORs, ten ward beds, three intensive care unit (ICU) beds, a 1,000-unit blood bank, and x-ray capabilities in addition to full dental facilities. With augmentation it can provide 15 ICU and 45 ward beds.

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- The LHD provides a surgical capability of six (four main and two emergency) ORs, along with 15 ICU / recovery beds, 45 ward / holding beds, laboratories, and a blood bank.

Each ship is capable of providing medical assistance to 60 patients per day for one day, 40 patients per day for four days, and 30 patients, on a sustained basis, based on patient evacuation policy of 24 hours.

- **Expeditionary Medical Facility (EMF [10-116 Bed]):** Intended to support a COCOM, the EMF is a scalable facility, capable of providing two ORs (2-4 operating tables), 4-20 ICU beds, and 6-96 acute care beds, as well as laboratory, X-ray, and pharmacy services.

Marine Corps (Medical and dental support is provided by the Navy)

- **Medical Battalion (MedBn):** Assigned to the Marine Logistics Group, the three AC and one RC MedBns are the primary source of HSS above the battalion / squadron and regiment / group-level aid station; it provides resuscitative care and temporary holding of casualties. It is composed of a Headquarters & Service Company which includes eight Shock and Trauma Platoons, and three Surgical Companies, each of which is capable of establishing three ORs and a 60-bed ward, along with laboratory, X-ray, and pharmacy services.^[16]

Execution of DSCA Medical Operations

As an ESF#8 Support Agency, DoD will coordinate DSCA activities through its chain of command. The focus of DoD medical support is to save lives, decrease morbidity, and restore essential health services in collaboration with State and local health authorities.^[17] The level of the medical response approved by SecDef will vary, based on the type and scale of the emergency and national security considerations. However, a clear focus must remain on transition to other Federal or civilian medical support organizations because DoD would typically be the capability of last resort in most natural disasters. DoD response is provided through one of the two following methods.

1. Immediate Response

Acute situations may require response prior to detailed DoD coordination. Imminently serious conditions resulting from any civil emergency requiring immediate action to save lives, prevent human suffering, or mitigate great property damage is covered under the immediate response provision in DoDD 3025.18 as previously discussed.^[6] When such conditions exist and time does not permit approval from higher headquarters, local military commanders and responsible officials from DoD components are authorized to take necessary action to respond to requests of civil authorities. Figure-17: Immediate Response Criteria depicts the primary governing criteria for an Immediate Response mission.

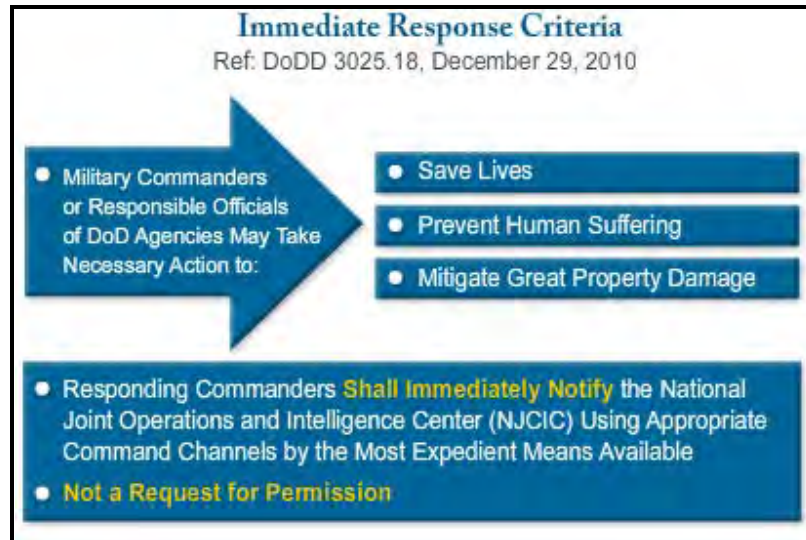


Figure-17: Immediate Response Criteria

Adapted from:

^c U.S. Department of Defense. Department of Defense Directive. Defense Support of Civil Authorities (DSCA) [Internet]. 2010 Dec 29 [cited 2011 Oct]. 17 p. Report number: 3025.18. Available from: <http://www.dtic.mil/whs/directives/corres/pdf/302518p.pdf>

Medical Immediate Response is usually coordinated locally based on existing memorandums of agreement but can also be executed by non-MTF medical units or personnel assigned to such facilities as National Guard armories and (T10) Reserve Centers, especially in response to an in-extremis circumstance. DoDD 3025.18 and the JCS Standing DSCA EXORD authorize Immediate Response activities to continue for 72 hours before obtaining higher level authorization to provide continued support.^[6]

2. DSCA Mission Assignment Execution

Once the Stafford or Economy Act has been enacted, DoD's role as an ESF#8 supporting agency is executed through NDMS and non-NDMS DSCA tasking.

- **NDMS:** DoD is one of the four Federal departments with NDMS responsibilities. The first element of NDMS, Medical Response, is not a DoD responsibility and is principally conducted by deployable HHS NDMS teams, although requests for surge medical capability from other Federal departments, such as from DoD or VA, may be utilized to augment these teams. DoD supports the remaining two major NDMS components.^[18]
- **Patient Evacuation:** DoD is the lead agency, providing aeromedical evacuation, primarily provided by AMC strategic fixed wing assets through USTRANSCOM as depicted in Figure-18: NDMS DoD Patient Movement Systems. All other modes of patient movement (e.g., rotary wing, ground ambulance) are currently managed and coordinated through FEMA's National Ambulance Contract.

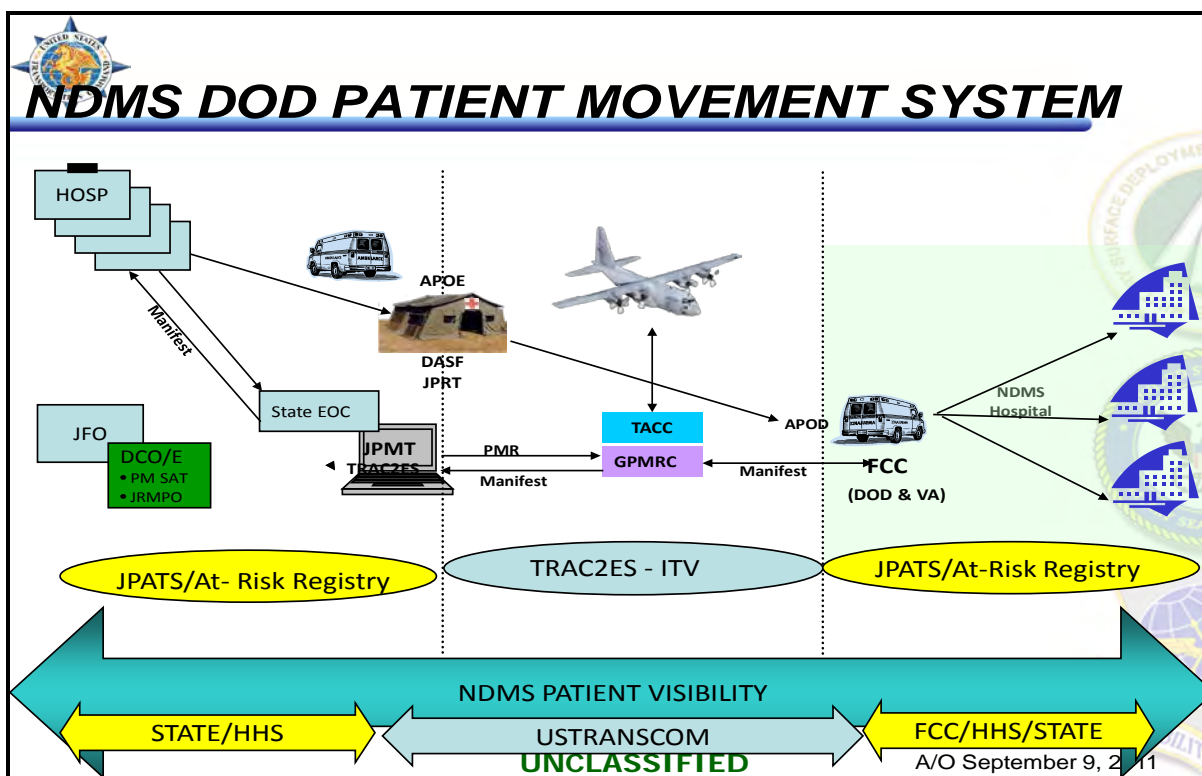


Figure-18: NDMS DoD Patient Movement Systems

Source:

^d U.S. Department of Defense. U.S. Transportation Command (USTRANSCOM). "NDMS DoD Patient Movement System" [slide]. USTRANSCOM: 2011.

Terms in Figure-17: NDMS DoD Patient Movement Systems not previously used in this report are defined in Table 35: Terms from Figure DoD-7.

Table-35: Terms from Figure DoD-7	
Abbreviation	Definition
APOE	Aerial Port of Embarkation
GPMRC	Global Patient Movement Requirements Center
ITV	In-Transit Visibility
JPATS	Joint Patient Assessment & Tracking System
JPMT	Joint Patient Movement Team
JPRT	Joint Patient Reporting Team
PM SAT	Patient Movement Situational Awareness Team
PMR	Patient Movement Request
TACC	Tanker Airlift Control Center
TRAC2ES	(US)TRANSCOM Regulating and Command & Control Evacuation System

Adapted from:

^e U.S. Department of Defense. Written comments provided by OASD (HD&ASA). 2011 Jul 1.

^f U.S. Department of Defense. "Patient Movement Response" [Brief]. 2009 Apr 29.

- **Definitive Care:** DoD and the VA have Memoranda of Agreement with NDMS participating civilian hospitals throughout the country. NDMS hospitals currently provide approximately 3,700 beds of the estimated NDMS total hospital bed capability of 93,000.^[19]
- **Non-NDMS:** Units are advised to execute approved DSCA missions through issuance of orders through the appropriate chain of command. Each of these orders specifies the mission the unit is to perform, the higher DoD headquarters under which the unit is performing the mission, initial deployment and execution timeframes, movement and unit support information, and other mission-specific special instructions. These missions may include providing internally-focused, unit-level FHP&R / HSS or externally-focused public health / medical assistance to the affected population, either directly in support of local or State authorities, or by assisting other Federal ESF#8 assets, such as NDMS teams and other missions such as mortuary affairs assistance.

In addition, non-Federal assistance can be provided by National Guard medical units deployed under individual State-to-State, regional multi-State agreements, or through EMAC under the command of the supported State's Adjutant General. One of the baseline principles addressed previously in this section is that DoD forces performing DSCA missions remain under SecDef (DoD) command and control. In the past, this has resulted in a parallel military command structure: non-federalized (i.e., SAD and T32) National Guard units under the control of the Governor via the State Adjutant General, and T10 forces under a designated DoD commander, which has the potential to result in unintended duplication of effort, extended planning and execution timeframes, and other hindrances to an effective and efficient consolidated DSCA effort. A recently adopted "Joint Action Plan for Developing Unity of Effort" is intended to remedy this through the establishment of a Contingency Dual Status Commander (CDSC), a State-identified General Officer who, after certification, is the designated SAD / T32 / T10 JTF commander, providing an integrated command and control structure for all non-federalized National Guard and T10 DoD forces deployed into the JTF AOR.^[20-21] (Lt Col L. Erdman and LT C. Anderson, DoD [U.S. Northern Command], personal communication, 2011 Jun 26)

"Expectations of Response"

DoD military units train for executing missions based on the Universal Joint Task List and individual Service-level task lists, which focuses on DoD's warfighting responsibilities.^[22] An initiative under development known as the Civil Support Task List is intended to also address DSCA missions.^[23] Once deployed to a disaster, DoD medical units execute their assigned missions in accordance with applicable DoD or Service-level health care provider credentialing, licensing, and training requirements, of which a representative sample is listed in Table-37: Credentialing, Licensing and Training for Medical Units.

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Table-36: Credentialing, Licensing and Training for Medical Units				
DoD	DoDD 6000.12E (Health Service Support) 6 Jan 11 ^[g]	DoDD 6000.13 (Medical Manpower and Personnel) 30 Jun 97 ^[h]	DoD Instruction (DoDI) 1322.24 (Medical Readiness Training) 12 Jul 02 ^[i]	DoDI 6025.13 (Medical Quality Assurance [MQA] and Clinical Quality Management in the Military Health System) 17 Feb 11 ^[j]
Army	Army Regulation (AR) 40-1 (Composition, Missions and Functions of the Army Medical Department) 1 Jul 83 ^[k]	AR 351-3 (Professional Education and Training Programs of the Army Medical Department) 15 Oct 07 ^[l]	AR 40-68 (Clinical Quality Management) 22 May 09 ^[m]	
Navy	Bureau of Medicine and Surgery Instruction (BUMEDINST) 1500.29 (Navy Medicine Command Training Program) 24 Sep 10 ^[n]	BUMEDINST 1500.19B (Navy Medical Corps Integral Parts of Training) 6 Aug 07 ^[o]	BUMEDINST 1520.34A (Continuing Education Programs for Medical Corps and Nurse Corps Officers) 17 Mar 97 ^[p]	BUMEDINST 6320.66E (Credentials Review and Privileging Program) 29 Aug 06 ^[q]
Air Force	Air Force Instruction (AFI) 41-106 (Medical Readiness Program Management) 1 Jul 11 ^[r]	AFI 41-105 (Medical Training Programs) 9 Nov 10 ^[s]	AFI 44-119 (Medical Quality Operations) 24 Sep 07 ^[t]	

Adapted from:

^g Department of Defense Directive. Health Service Support [Internet]. 2011 Jan 6 [cited 2011 Oct]. 6 p. Report No: 6000.12E. Available from: <http://www.dtic.mil/whs/directives/corres/pdf/600012e.pdf>

^h Department of Defense Directive. Medical Manpower and Personnel [Internet]. 1997 Jun 30 [cited 2011 Oct]. 22 p. Report No: 6000.13. Available from: <http://www.dtic.mil/whs/directives/corres/pdf/6000.13p.pdf>

ⁱ U.S. Department of Defense. DoD Instruction: Medical Readiness Training [Internet]. 2011 Oct 6 [cited 2011 Oct]. 11 p. Report No: 1322.24. Available from: <http://www.dtic.mil/whs/directives/corres/pdf/132224p.pdf>

^j U.S. Department of Defense. DoD Instruction: Medical Quality Assurance [MQA] and Clinical Quality Management in the Military Health System [Internet]. 2011 Feb 17 [cited 2011 Oct]. 11 p. Report No: 6025.13. Available from: <http://www.dtic.mil/whs/directives/corres/pdf/602513p.pdf>

^k U.S. Department of Defense. Army Regulation: Composition, Missions and Functions of the Army Medical Department [Internet]. 1983 Jul 1 [cited 2011 Oct]. Report Number: 40-1. Available from: http://www.apd.army.mil/jw2/xmldemo/r40_1/head.asp

^l U.S. Department of Defense. Army Regulation: Professional Education and Training Programs of the Army Medical Department. 2007 Oct 15 [cited 2011 Oct]. 11 p. Report No: 351-3. Available from: http://www.apd.army.mil/jw2/xmldemo/r351_3/main.asp

^m U.S. Department of Defense. Army Regulation: Clinical Quality Management. 2009 May 22 [cited 2011 Oct]. Report No: 40-68. Available from: http://www.apd.army.mil/jw2/xmldemo/r40_68/head.asp

ⁿ U.S. Department of Defense. Bureau of Medicine and Surgery Instruction: Navy Medicine Command Training Program. 2010 Sep 24 [cited 2011 Oct]. 12 p. Report No: 1500.29. Available from: <http://www.med.navy.mil/directives/ExternalDirectives/1500.29.pdf>

^o U.S. Department of Defense. Bureau of Medicine and Surgery Instruction: Navy Medical Corps Integral Parts of Training. 2007 Aug 6 [cited 2011 Oct]. 3 p. Report No: 1500.19B. Available from: <http://www.med.navy.mil/directives/ExternalDirectives/1500.19B.pdf>

^p U.S. Department of Defense. Bureau of Medicine and Surgery Instruction: Continuing Education Programs for Medical Corps and Nurse Corps Officers. 1997 Mar 17 [cited 2011 Oct.] 2 p. Report No: 1520.34A. Available from: <http://www.med.navy.mil/directives/ExternalDirectives/1520.34A.pdf>

Department of Defense (DoD)

^q U.S. Department of Defense. Bureau of Medicine and Surgery Instruction: Credentials Review and Privileging Program. 2006 Aug 29 [cited 2011 Oct]. 65 p. Report No: 6320.66E. Available from: [http://www.med.navy.mil/directives/ExternalDirectives/6320.66E%20.%20Part%201%20\(Basic\).pdf](http://www.med.navy.mil/directives/ExternalDirectives/6320.66E%20.%20Part%201%20(Basic).pdf)

^r U.S. Department of Defense. Air Force Instruction: Medical Readiness Program Management. 2011 Jul 1 [cited 2011 Oct]. 167 p. Report No: 41-106. Available from: <http://www.e-publishing.af.mil/shared/media/epubs/AFI41-106.pdf>

^s U.S. Department of Defense. Air Force Instruction (AFI): Medical Training Programs. 2010 Nov 9 [cited 2011 Oct]. 4 p. Report No: 41-105. Available from: <http://www.e-publishing.af.mil/shared/media/epubs/AFI41-105.pdf>

^t U.S. Department of Defense. Air Force Instruction: Medical Quality Operations. 2011 Aug 4 [cited 2011 Oct]. 290 p. Report No: 44-119. Available from: <http://www.e-publishing.af.mil/shared/media/epubs/AFI44-119.pdf>

Another mechanism assisting in workforce management is the Centralized Credentials and Quality Assurance System (CCQAS), a web-based DoD-wide credential, privilege management, risk management, and adverse actions system sponsored by ASD (HA).^[24-25]

An important liability protection for DoD providers is the Federal Tort Claims Act, a statute contained in Title 28, U.S. Code which authorizes tort suits to be brought against the Federal government for injuries caused by the negligent or wrongful act or omission of any Federal employee acting within the scope of his employment, in accordance with the law of the State where the act or omission occurred. One of the three major exceptions, under which the Federal government may not be held liable, even in circumstances where a private person could be held liable under State law, is the Feres doctrine, which prohibits suits by military personnel for injuries sustained incident to service.^[26] Additional protection may also be provided by "Good Samaritan" or other such statutes in the State where the disaster has occurred.

Summary

DoD provides a large nationwide source of expeditionary and fixed facility-based medical resources that are largely self-contained and that possess an existing logistics network to provide resupply and other sustainment support. The geographical distribution of DoD medical capabilities throughout the nation provides protection of these resources (i.e., they are not all in one locale) as well as proximity to possible disaster sites. DoD medical resources have a well-defined organizational structure with an established chain of command, a highly-developed and experienced planning and operational execution framework, and a robust, high-capacity communications network. The designation of USNORTHCOM as the senior Federal-level military headquarters, with forward positioning of USNORTHCOM Joint Regional Medical Planners, coupled with ongoing coordination with the National Guard State Surgeons at the State level provides the ability to conduct pre-disaster planning and, through the DCOs and CDSCs, deploy an integrated Federal / non-Federal military medical response. The ability of installation-based MTFs under "Immediate Response" provides additional capability.

References

- [1] U.S. Department of Defense. 2010 Quadrennial defense review [Internet]. 2010 Feb [cited 2011 Oct]. 128 p. Available from: <http://www.defense.gov/qdr/qdr%20as%20of%2029jan10%201600.PDF>
- [2] U.S. Department of Defense. Joint Publication 3-27 (Homeland Defense) [Internet]. 2001 Jul 12 [cited 2011 Oct]. 181 p. Available from: http://www.dtic.mil/doctrine/new_pubs/jp3_27.pdf
- [3] U.S. Department of Defense. Joint Publication 3-28 (Civil Support) [Internet]. 2007 Sep14 [cited 2011 Oct]. 153 p. Available from: http://www.dtic.mil/doctrine/new_pubs/jp3_28.pdf
- [4] U.S. Government Printing Office. U.S. Code by title [Internet]. 2007 Jan 3 [updated 2009 Jul 7; cited 2011 Oct]. Available from: <http://www.gpoaccess.gov/uscode/browse.html>
- [5] Emergency Management Assistance Compact website [Internet]. Cited 2011 Oct. Available from: <http://www.emacweb.org/>
- [6] U.S. Department of Defense. Department of Defense Directive. Defense Support of Civil Authorities (DSCA) [Internet]. 2010 Dec 29 [cited 2011 Oct]. 17 p. Report number: 3025.18. Available from: <http://www.dtic.mil/whs/directives/corres/pdf/302518p.pdf>
- [7] U.S. House of Representatives. 2011 U.S. Code. Title 10, Chapter 1003, Section 10101 (as amended) [Internet]. 2011 Jul 01 [cited 2011 Oct]. Available from: <http://uscode.house.gov/download/pls/10C1003.txt>
- [8] U.S. Department of Defense (DoD). National Guard Bureau (NGB). Office of the Joint Surgeon website [Internet]. Cited 2011 Oct. Available from: <http://www.ng.mil/jointstaff/ss/jsg/default.aspx>
- [9] U.S. Department of Defense. National Guard Bureau website. Weapons of Mass Destruction-Civil Support Team Fact Sheet [Internet]. 2011 [cited 2011 Oct]. 2 p. Available from: http://www.ng.mil/media/factsheets/wmd-cst_historical.doc
- [10] U.S. Department of Defense. CBRNE Enhanced Response Force Package (CERFP) Fact Sheet [Internet]. 2010 Jun 3 [cited 2011 Oct]. Available from: <http://www.defense.gov/news/d20100603CERFPs.pdf>
- [11] U.S. Department of Defense. Homeland Response Force Fact Sheet [Internet]. 2010 Jun 3 [cited 2011 Oct]. 2 p. Available from: <http://www.defense.gov/news/d20100603hrf.pdf>
- [12] Mills, Donna. Army Reserve Chiefs: Have Reservists Do Homeland Missions. American Forces Press Services (Washington) [Internet]. 2011 Apr 6 [cited 2011 Oct]. Available from: <http://www.defense.gov/news/newsarticle.aspx?id=63459>

Department of Defense (DoD)

[13] U.S. Department of Defense. Chemical, Biological, Radiological, Nuclear, and High Yield Explosives Consequence Management Reaction Force Fact Sheet [Internet]. 2011 [Cited 2011 Oct]. Available from: <http://www.northcom.mil/news/2008/CCMRF/index.html>

[14] U.S. Department of Health and Human Services website. ESF #8 Pre-Scripted Mission Assignments (PSMAs) [Internet]. 2011 May 11 (cited 2011 Oct). Available from: <http://www.phe.gov/Preparedness/planning/playbooks/rdd/Pages/subtask.aspx>

[15] U.S. Department of Defense. "NORAD – USNORTHCOM Surgeon's Medical Capabilities Smartbook (through Interim Change)." 2009 Jul 11.

[16] U.S. Marine Corps. U.S. Department of Defense. Health Service Support Operations. U.S. Marine Corps Warfighting publication [Internet]. 1998 [cited 2011 Oct]; 4(11): 1-104. Available from: <http://www.marines.mil/news/publications/Documents/MCWP%204-11.1%20Health%20Service%20Support%20Operations.pdf>

[17] U.S. Department of Defense. Joint Publication 4-02 (Health Service Support) [Internet]. 2006 Oct 31 [cited 2011 Oct]. 383 p. Available from: http://www.dtic.mil/doctrine/new_pubs/jp4_02.pdf

[18] U.S. Department of Health and Human Services. National Disaster Medical System website [Internet]. 2010 Jun 14 [cited 2011 Oct]. Available from: <http://www.phe.gov/preparedness/responders/ndms/Pages/default.aspx>

[19] U.S. Department of Defense. U.S. Army Northern Command DSCA II Course "Joint Regional Medical Planning and Operations (JRMPO)" [Brief]. 2010 Aug 24.

[20] American Forces Press Service. DoD, Governors Bridge Gaps in Response [Internet]. 2011 March 11 [cited 2011 Oct]. Available from: <http://www.defense.gov/news/newsarticle.aspx?id=63128>

[21] U.S. Department of Defense. USN Northern Command J3 "Contingency Dual-Status Commander" briefing during National Center for Disaster Medicine and Public Health. Data collection visit. 2011 April 6.

[22] U.S. Department of Defense. Chairman of the Joint Chiefs of Staff. Uniform Joint Task List Manual [Internet]. 2011 Jun 1 [cited 2011 Nov 17]. Available from: http://www.dtic.mil/cjcs_directives/cdata/unlimit/m350004.pdf

[23] U.S. Department of Defense. California National Guard. Civil Support Task List Executive Summary. U.S. Department of Defense; 2010.

[24] U.S. Department of Defense. Defense Health Services Systems Fact Sheet: Centralized Credentials and Quality Assurance System (CCQAS) [Internet]. 2009 March 30 [cited 2011 Oct]. Available from: http://health.mil/Libraries/OCIO_Documents/CCQAS_Fact_Sheet.pdf

Department of Defense (DoD)

[25] U.S. Department of Defense. TRICARE Management Activity. Centralized Credentials and Quality Assurance System (CCQAS) Information Paper [Internet]. 1995 Oct 1 [cited 2011 Oct]. Available from: <http://www.tricare.mil/readiness/ccqas.html>

[26] Congressional Research Service. Report for Congress 95-717 "Federal Tort Claims Act." 2007 Dec 11 [cited 2011 Oct]. 32 p. Available from: http://assets.opencrs.com/rpts/95-717_20071211.pdf

DEPARTMENT OF VETERANS AFFAIRS (VA)

Introduction

The Department of Veterans Affairs (VA) is an important Emergency Support Function (ESF) #8 Support Agency, providing available medical resources to individuals affected by a major disaster. In the event of a disaster, the Department of Health and Human Services (HHS) may ask the VA to assist State, local, territorial, or tribal public health and medical personnel with individual clinical public health and medical care specialists.^[1]

ESF#8 operations are normally provided in response to a DHS Mission Assignment transmitted through the HHS Secretary's Operations Center, which facilitates the coordination of public health and medical responses for HHS.^[2] An HHS Mission Assignment Sub-Tasking is forwarded to the VA Integrated Operations Center (IOC), under the Assistant Secretary for Operations, Security, and Preparedness, where it is coordinated with the Office of Emergency Management (OEM) of the Veterans Health Administration (VHA), led by the Under Secretary for Health. Once the Sub-Tasking has been validated, it is executed by VA medical assets belonging to VHA.^[3] ('Also;' Dr. R. Smith, Department of Veterans affairs [VA] (Veterans Health Administration [VHA]), personal communication, 2011 Jun 22)

The Disaster Emergency Medical Personnel System

The VA does not have dedicated disaster medical response organizations. It creates as-required teams using the Disaster Emergency Medical Personnel System (DEMPS), consisting of VHA personnel who have registered as volunteers.^[4] The DEMPS program was established to provide a means of identifying VHA personnel willing to volunteer for emergency responses and is currently guided by VHA Handbook 0320.03.^[4] ('Also;' Dr. R. Smith, VA [VHA], personal communication, 2011 June 22) DEMPS maintains a database that serves as a repository for current full-time and retired VHA employees who also register as volunteers. Retired VHA employees constitute the Emergency Reserve Corps (ERC), which is incorporated into DEMPS and is used to back-fill full-time staff that deploy to disasters.^[5] DEMPS allows rapid identification and deployment of qualified personnel. Subject to approval by their facility director based on the availability of resources and funding, and consistent with its mission to give priority services to Veterans, during a disaster the VA will deploy DEMPS volunteers to assist with incident-related medical care.^[2]

VHA personnel interested in volunteering may apply to DEMPS either online or by submitting a DEMPS registration form. All DEMPS volunteers are required to review and ensure that their information in the DEMPS database is current and complete on a quarterly basis. Retiring clinical practitioners who are interested in volunteering are required to make sure the credentialing office has updated the VETPRO system (a Web-based physician credentialing system for Federal agencies that employ healthcare providers) to remain on staff without privileges or scope of practice.^[4]

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As shown in Table-37: DEMPS Volunteers, DEMPS currently includes over 8,000 volunteers in various major professions and trade skills categories as of October 2011. (It should be recognized these totals may vary from month to month.)

Table-37: DEMPS Volunteers		
Professions	Numbers	Percent
MD/DO	312	3.9%
Nurse Practitioner	249	3.1%
Physician Assistant	91	1.1%
Allied Health Clinician	988	12.3%
RN	1755	21.8%
Clinical Nurse Specialist	46	0.6%
Nurse Manager	142	1.8%
Nursing Shift Supervisor	29	0.4%
LPN/LVN	542	6.7%
Nursing Assistant	234	2.9%
Health Technician	252	3.1%
Clinical Support	402	5.0%
Administration Management	1106	13.7%
Administration Support	1227	15.2%
Trade/Craft Skills	671	8.3%

Adapted from:

^a Smith R (U.S. Department of Veteran Affairs / Veteran's Health Administration). Email to Diana Luan (National Center for Disaster Medicine and Public Health) (dluan@usuhs.mil), Kenneth Schor (National Center for Disaster Medicine and Public Health) (jschor@usuhs.mil) 2011 Jan 7 [cited 2011 Oct].

Based upon two types of missions, internal and external, teams are organized to meet specific mission requirements:

- Internal missions include support of VA facilities negatively impacted by emergencies or disasters.^[6]
- External missions include support requested by Federal plans and authorities such as National Response Framework.^[6] One such external mission that VHA may be tasked to perform is to provide staffing for up to two Federal Medical Stations (FMS). As described in the HHS section of this report, FMS are scalable, modular, and rapidly deployable facilities that can be staffed by medical professionals from the State or local health agencies, NDMS Disaster Medical Assistance Teams, U.S. Public Health Service Commissioned Corps officers, as well as VA personnel to provide non-acute medical, mental health, and other healthcare requirements.^[7] The FMS requires about 48 hours from the time of request to the time of delivery for missions within the continental U.S. However this may vary depending on unexpected circumstances. Each FMS has a 250 bed capacity and is staffed by a team of 202 VHA personnel.^[7] ('Also;' Dr. R. Smith, VA [VHA], personal communication, 2011 Jun 22)

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To ensure DEMPS sustainability, the VHA area Veteran Integrated Service Network (VISN) Director ensures volunteer recruitment takes place. VA uses a recruitment program that includes the distribution of DEMPS promotional materials to staff and the conduct of training and exercises to encourage personnel to volunteer for DEMPS.^[4] Information about the ERC is also provided to all retiring personnel during their pre-retirement counseling and upon the date of their retirement. Finally there is also a three-month and one-year follow-up program to encourage their becoming ERC members. The DEMPS National Program Manager keeps track of the number of volunteers by distributing monthly reports on the number of DEMPS volunteers to VHA leadership and OEM field staff.^[4]

In order to provide a deployment-ready ESF#8 workforce from among these volunteers, the VHA ensures they are fully credentialed. This is accomplished by identifying personnel qualifications, skills, and experience through an online or paper form. All DEMPS volunteers receive an annual physical examination, including immunizations.^[4] Volunteers also complete a variety of training courses as part of an ongoing education and training program. The annual training requirements vary yearly based on lessons learned from previous deployments.^[4] Distance learning contains competency-based modules all volunteers take annually to maintain an active deployment status. DEMPS also offers a 3-4 day field training experience that takes volunteers through the deployment life cycle. This field training is vital to managing expectations and prepares the volunteers to effectively contribute to real-world deployments.^[6] Volunteers are also provided a DEMPS Deployment Handbook.

In 2004, VHA awarded a contract to the Institute for Crisis Disaster & Risk Management to develop a national peer-reviewed National Incident Management System compliant competency based instructional outline and curriculum. This contract will help educate VHA personnel on response and recovery processes and procedures in healthcare emergencies and disasters.^[8] This curriculum serves as a resource for DEMPS training program, and is one of the numerous actions VHA has taken to improve its internal and external emergency preparedness.

VA Support of the National Disaster Medical System

One of the VA's primary ESF#8 assets are its National Disaster Medical System (NDMS) Federal Coordinating Centers (FCCs), as described in the HHS section of this report.^[3] Currently there are 56 VA medical centers designated as NDMS FCCs. (Dr. R. Smith, VA [VHA], personal communication, 2011 Jun 22) Figure-19: Federal Coordinating Centers shows the locations of the current VA as well as Department of Defense (DoD) FCCs:

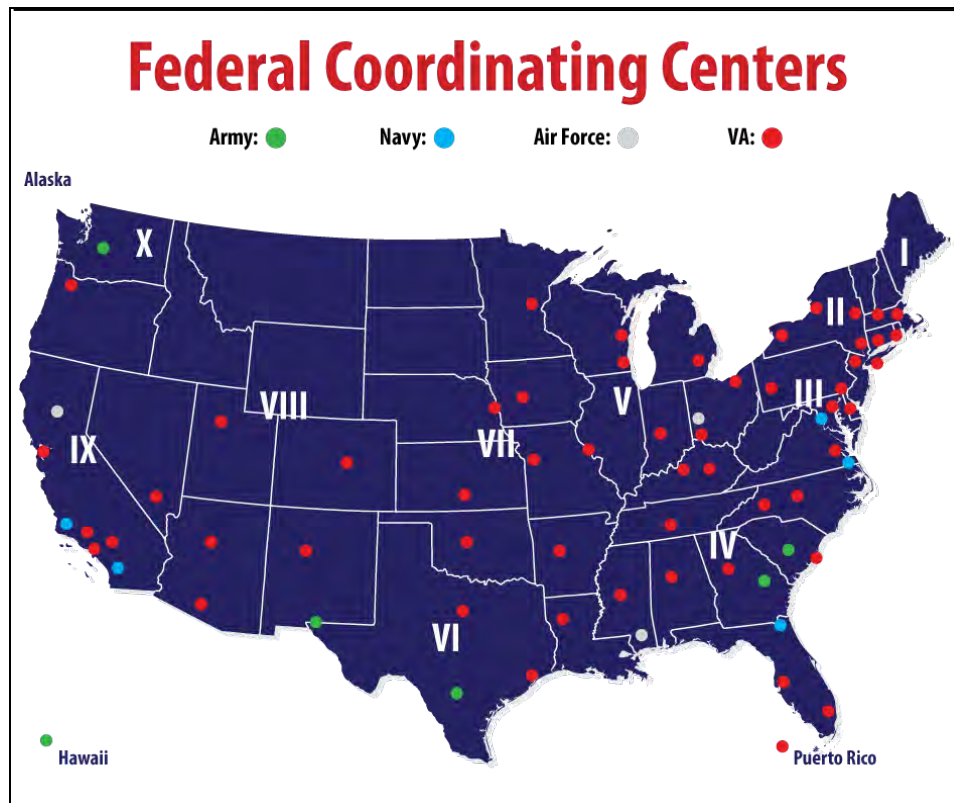


Figure-19: Federal Coordinating Centers

Source:

^b U.S. Department of Health and Human Services. National Disaster Medical Systems, serving the Federal response with disaster medical services [Internet]. Updated 2010 Apr 29 [cited 2011 Oct]. Available from: <http://ndms.fhpr.osd.mil/>

Summary

The Department of Veteran Affairs' first priority is to take care of our nation's Veterans. Subject to availability of funds and resources, the VA also plays an important role in the provision of medical care during natural disasters. VA's strategic plan for the Fiscal Year 2010-2014 identifies four key strategic goals one of which is "Raise readiness to provide services and protect people and assets continuously and in time of crisis."^[9]

Even though they do not have standing disaster medical organizations, the VA creates as-required teams from the pool of VHA personnel who have registered as volunteers in the DEMPS. VA's other primary ESF#8 assets are its network of NDMS FCCs that work with local and State emergency management and health departments to coordinate reception and local distribution of patients to NDMS participating hospitals.^[2]

In the VHA, "current credentials does not equate current competency." At the time of deployment DEMPS volunteers' individual readiness is verified to ensure they meet all requirements, to include an updated physical examination, current immunizations, and completion of required training courses.^[4] VHA continues to improve its emergency

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preparedness by providing DEMPS volunteers with continuous training programs, competency-based training modules, patient care services as well as nursing services.

One of the key observations within this report is VHA's investment of effort and resources in making sure all volunteers support the guidelines in the VHA Handbook.

References

- [1] U.S. Department of Homeland Security. Emergency Support Function #8–Public health and medical services annex [Internet]. 2008 Jan [cited 2011 Oct]. 16 p. Available from: <http://www.fema.gov/pdf/emergency/nrf/nrf-esf-08.pdf>
- [2] U.S. Department of Health and Human Services website [Internet]. Updated 2011 Feb 15 [cited 2011 Oct]. Available from: <http://www.phe.gov/Preparedness/responders/soc/Pages/organization.aspx>
- [3] Veterans health care: VA's medical support role in emergency preparedness. U.S. Department of Veteran Affairs; 2005.
- [4] Department of Veteran Affairs. Disaster Emergency Medical Personnel System (DEMPS) Program and Database. VHA handbook. 2008; 0320.03.
- [5] U.S. Department of Veteran Affairs. Veterans Health Administration. Retiree Emergency Reserve Corps brochure [brochure; Internet]. 2011 [cited 2011 Oct]. Available from: http://www.publichealth.va.gov/docs/emergencymanagement/ERC_Retiree_Brochure.pdf
- [6] Smith R (U.S. Department of Veteran Affairs / Veteran's Health Administration). Email to Diana Luan (National Center for Disaster Medicine and Public Health) (dluan@usuhs.mil), Kenneth Schor (National Center for Disaster Medicine and Public Health) (jschor@usuhs.mil) 2011 Jan 7 [cited 2011 Oct].
- [7] U.S. Department of Health and Human Services. Medical assistance [Internet]. Updated 2011 Mar 27 [cited 2011 Oct]. Available from: <http://www.phe.gov/Preparedness/support/medicalassistance/Pages/default.aspx#fms>.
- [8] Barbera JA et al. Healthcare emergency management competencies: Competency framework final report (Updated) [Internet]. Washington: The George Washington University Institute for Crisis, Disaster and Risk Management. 2007 Oct 11. Available from: <http://www.gwu.edu/~icdrm/projects/VHA2/index.htm>
- [9] U.S. Department of Veteran Affairs. Strategic plan FY 2010-2014 [Internet]. Updated 2010 Jun [cited 2011 Nov]. Available from: http://www.va.gov/op3/Docs/StrategicPlanning/VA_2010_2014_Strategic_Plan.pdf

DEPARTMENT OF HOMELAND SECURITY (DHS)

Introduction

The Department of Homeland Security (DHS) is responsible for protecting United States territory from terrorist attack and natural disasters. As part of its mission, DHS has created through the Federal Emergency Management Agency (FEMA) the National Response Framework (NRF). The NRF identifies 15 Emergency Support Functions (ESFs) which were outlined in the Introduction to this report. The ESFs form the primary mechanism through which Federal Interagency assistance is provided to State, local, tribal, or territorial governments in response to a disaster, emergency, or other major national-level event. Through FEMA or another of its subordinate organizations, DHS is the Coordinator / Primary Agency for seven of the 15 current ESFs.^[1] DHS is also designated as one of the 16 supporting agencies for ESF#8- Public Health and Medical Services.^[2]

Emergency Support Function (ESF) #8 Support

When requested by the Department of Health and Human Services (HHS), the ESF#8 Coordinator and Primary Agency, DHS provides specific supporting services to the Federal ESF#8 response through several of its components:

- Office of Health Affairs (OHA), led by the Assistant Secretary for Health Affairs, serves as the Department of Homeland Security's principal authority for all medical and health issues. OHA provides medical, public health, and scientific expertise in support of DHS' mission to prepare for, respond to, and recover from all threats and serves as the principal advisor to the DHS Secretary and the FEMA Administrator on medical and public health issues. OHA also leads the Department's workforce health protection and medical oversight activities, its biological and chemical defense activities, and provides medical and scientific expertise to support the Department's preparedness and response efforts. OHA serves as the Department's primary point of contact ESF#8 to HHS.^[3]
- Federal Emergency Management Agency (FEMA) provides support to ESF#8 efforts including:^[2]
 - Managing the National Urban Search and Rescue (US&R) Response System, established in 1989 as a framework for structuring local emergency services personnel into integrated disaster response task forces. Today there are 28 US&R national task forces staffed and equipped to conduct around-the-clock operations to rescue victims of structural collapse. These task forces are a partnership between fire departments, law enforcement agencies, other local governmental agencies, private sector companies, and the Federal government, comprised of firefighters, engineers, medical professionals, canine / handler teams, and emergency managers with special training in the US&R environment.^[4]

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If a disaster event is determined to require national-level US&R support, FEMA will deploy the three closest task forces within six hours of notification, and additional teams as necessary. The role of these task forces is to support State and local emergency responders' efforts to locate victims and manage recovery operations. Each task force is self-sufficient for the first 72 hours of a deployment and consists of two 31-person teams, four canines, and a comprehensive equipment cache. For every US&R task force, there are 62 positions; to be sure a full team can respond to an emergency, a typical task force has more than 130 members to fill those 62 positions. US&R task force members work in one of four areas of specialization:^[4]

- Search, to find victims trapped after a disaster
- Rescue, which includes safely digging victims out of tons of collapsed concrete and metal
- Technical, made up of structural specialists who make rescues safe for the rescuers
- Medical, which cares for task force personnel and disaster victims by providing confined space and post-extraction treatment

The medical section of a FEMA US&R task force consists of:^[5]

- Two Medical Team Managers, who are "emergency medical physicians with pre-hospital experience."
 - Four Medical Specialists, who are "experienced paramedics or equivalent."
- Administering the National Ambulance Contract, awarded to American Medical Response (AMR) on 1 August 2007 as the sole prime provider of a full array of ground ambulance, air ambulance, and para-transit services to supplement Federal response to a Federally-declared disaster, acts of terrorism, or other public health emergency. As of October 2009 the contract covers the 48 contiguous States, which are divided by FEMA into four zones. Under this contract, AMR may be called upon to provide supplemental emergency medical services (EMS) support when local and State resources are overwhelmed. FEMA and HHS coordinate the response, while AMR provides tactical command and oversight of resources deployed pursuant to the contract.^[6]

AMR has established a network of subcontractors to assist in meeting these needs. Private, public, third-service, and volunteer EMS agencies have joined forces with AMR to form an EMS disaster response team (DRT). The EMS needs of local communities are primary and participation in the DRT is not intended to undermine those obligations. Additionally, States may have Emergency Management Assistance Compact (EMAC) agreements with ambulance services; AMR will not utilize these assets.

Deployments pursuant to the contract are made under Federal guidance including:^[6]

- FEMA Typed Resources Definitions - Emergency Medical Services
- FEMA National Emergency Responder Credentialing document (Both Basic and Advanced Life Support [BLS / ALS] services are utilized.)
- National EMS Core Content (defines the of out-of-hospital care domain)

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○ National EMS Scope of Practice Model

EMS and other DRT personnel are required to maintain current credentials in their home state to practice at the required skill level and complete training specified by AMR.^[6,7]

- Providing funding, through the Homeland Security Grant Program for the Metropolitan Medical Response System (MMRS) program, which assists designated local, metropolitan areas to sustain and further enhance regionally integrated all-hazards mass casualty preparedness and response. As of FY2010, this program provides funding to 124 jurisdictions.^[8]
- Providing logistical support for deploying ESF #8 medical elements and coordinating the use of mobilization centers / staging areas, transportation of resources, use of disaster fuel contracts, emergency meals, potable water, base camp services, supply and equipment resupply, and use of all national contracts and Interagency agreements managed by DHS for response operations. HHS can task FEMA, under a pre-scripted mission assignment, to establish and operate a shelter near Federal Medical Station(s) (FMS) for non-medical caregivers and family members of FMS patients.^[9]
- Providing ESF#8 resource tracking ability using GPS.
- Providing tactical communications support (i.e., deployable satellite and terrestrial radio communications).

Additionally, FEMA provides health profession workforce development through courses at the Emergency Management Institute.

- U.S. Coast Guard (USCG), which, as one of the five Armed Forces of the United States (as defined by Title 10 of the U.S. Code), defends U.S. maritime borders and provides search and rescue (SAR) capability along the coastline and within U.S. waterways. The USCG has two functions under ESF #8 as a support agency to HHS: identification and arrangement for use of USCG aircraft and other assets in providing urgent airlift and other transportation support and assisting in DHS enforcement of international quarantines in coordination with Customs and Border Protection (CBP) and Immigration and Customs Enforcement (ICE). (CAPT J. Salvon-Harman and CDR E. Schwartz, U.S. Department of Homeland Security [DHS] [U.S. Coast Guard (USCG)], personal communications, 2011 Feb 16, Jun 16, and Sep 5)

As depicted in Table-38: USCG Health Care Personnel, USCG health care personnel include commissioned U.S. Public Health Service (USPHS) officers detailed to the USCG and USCG officers, enlisted, and civilian personnel as well as contracted civilian personnel.

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Table-38: USCG Health Care Personnel

Category	Profession	Number
U.S. Public Health Service Health Care Personnel	Physician	63
	Dentist	58
	Physician Assistant /Nurse Practitioner (PA / NP)	4
	Pharmacist	16
	Physical Therapist	3
	Environmental Health Officer	18
USCG Medical Officers	PA / NP	31
USCG Health Services Technicians (HS)	Corpsman; Dental / Pharmacy / X-Ray Technician	738
Contract Health Care Personnel	(Multiple)	540

Adapted from:

^a CAPT J. Salvon-Harman and CDR E. Schwartz, DHS [USCG], personal communications, 2011 Feb 16, Jun 16, and Sep 5

The USCG health care system has one primary internal mission – force health protection for USCG personnel, with uniformed health care personnel organized to meet specific mission requirements. USCG uniformed health care personnel can also deploy in support of ESF#8 mission assignments tasked to the USCG. (An example of a typical task would be for a physician and HS to augment the Federal Joint Field Office Medical Unit.) (CDR E. Schwartz, DHS [USCG], personal communication, 2011 Feb 16 and Jun 16; CAPT J. Salvon-Harman, DHS [USCG], personal communication, 2011 Sep 5) The USCG may deploy health care personnel to augment local USCG medical facilities or support its operations as a Primary Agency for ESF#9 (SAR) or ESF#10-Oil and Hazardous Materials Response.^[10] ('Also;' CAPT J. Salvon-Harman and CDR E. Schwartz, DHS [USCG], personal communications, 2011 Feb 16, Jun 16, and Sep 5)

USCG Flight Surgeons may directly participate in aeromedical evacuation missions, assisted by first responders such as Aviation Survival Technicians (AST) or Health Services Technicians (HST) with Emergency Medical Technician (EMT)-Basic level training. USCG assets are only utilized for this purpose when other dedicated medical transport options have been exhausted. Medevac mission taskings originate at the USCG District Operations Center. (CAPT J. Salvon-Harman, DHS [USCG], personal communication, 2011 Sep 5)

The USCG can also deploy a mobile medical unit, staffed by USCG health care personnel and supporting administrative / engineering personnel, which has a six-bed capacity and is capable of two weeks of sustained operations. (Note: Contract healthcare personnel are not deployable as they are on limited contracts to provide care at USCG clinics.) (CAPT J. Salvon-Harman and CDR E. Schwartz, DHS [USCG], personal communications, 2011 Feb 28, Jun 17, and Aug 18)

Only the Coast Guard has personnel assigned to an EMS billet as a requirement of their billet and requires them to maintain current National Registry of Emergency Management Technicians (NREMT) registration; other DHS elements utilize a volunteer, on-call EMS

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structure, with participation a collateral duty and, after initial certification and registration, do not require continued NREMT participation. Once certified, health workforce credentialing is done through the DHS component. (CAPT J. Salvon-Harman, DHS [USCG], personal communication, 2011 Oct 14)

- U.S. Customs and Border Protection and U.S. Immigration and Customs Enforcement, which, in conjunction with the USCG, conduct international quarantine enforcement operations and have first responder medical capability integrated into the following units:^[12]
 - U.S. Customs and Border Protection (CBP) has emergency medical service (EMS) personnel who provide internal force health protection to CBP personnel. An example is the Border Patrol Search, Trauma, and Rescue (BORSTAR) Team, formed in 1998 to provide an EMS organization trained in incidents involving medical trauma requiring expertise in desert and mountain rescue. The team performs technically challenging high- and low-angle rescues. CBP also provides agents with advanced medical training ranging from EMT through Paramedic.^[11]
 - U.S. Immigration and Customs Enforcement (ICE), which receives medical support from USPHS personnel who are assigned to the ICE Health Service Corps, formerly known as the Division of Immigration Health Services. They serve as the medical authority for ICE on a wide range of medical issues, including the agency's comprehensive detainee health care program. The ICE Health Service Corps staff currently consists of more than 900 U.S. Public Health Service commissioned officers, Federal civil servants and contract support staff, providing direct care to approximately 15,000 immigration detainees and oversees the medical support of another 17,000 immigration detainees.^[12]
- National Protection and Programs Directorate, which provides communications support to ESF#8 efforts not provided by FEMA through the National Communications System and situational awareness and other public health and healthcare critical infrastructure sector-related issues through the Office of Infrastructure Protection.^[2, 13] Additionally, the Federal Protective Service is presumed to have EMS capabilities similar to CBP and ICE.

Policy Documents

Coast Guard healthcare workforce is governed by Commandant Instruction (COMDTINST) M6000.1E (Coast Guard Medical Manual) and a to-be-released COMDTINST providing additional guidance for EMS personnel.^[14] ('Also;' CAPT J. Salvon-Harman, DHS [USCG], personal communication, 2011 Sep 5) All other DHS personnel are governed by DHS Directive 248-01 "Medical Qualification Management" dated 2 October 2009.^[15]

Summary

While DHS is not a major source of full-time Federal disaster healthcare-related workforce personnel in support of ESF#8, the support provided by FEMA through US&R medical and EMS volunteers, National Ambulance Contract personnel, and MMRS grant-funded teams located nationwide provide a multi-level on-call capability (i.e., on-scene treatment, stabilization

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and transport, and definitive care) as part of the overall Federal ESF#8 response structure. The remaining DHS healthcare-related structure is primarily intended to provide internally-focused force health protection and readiness, providing both full-spectrum (e.g., Coast Guard health care) and "Tactical EMS" (e.g., CBP) capability; this medical workforce may be available to support ESF#8 needs however plans or rules governing their employment beyond the scope of their normal activities could not be located.

References

- [1] U.S. Department of Homeland Security. Emergency Support Function annexes: Introduction [Internet]. 2008 Jan [cited 2011 Nov 15]. Available from: <http://www.fema.gov/pdf/emergency/nrf/nrf-esf-all.pdf>
- [2] U.S. Department of Homeland Security. Emergency Support Function #8-Public health and medical services annex [Internet]. 2008 Jan [cited 2011 Nov 15]. Available from: <http://www.fema.gov/pdf/emergency/nrf/nrf-esf-08.pdf>
- [3] U.S. Department of Homeland Security. Office of Health Affairs website [Internet]. 2011 [updated 2011 Aug 26; cited 2011 Nov 15]. Available from: http://www.dhs.gov/xabout/structure/editorial_0880.shtm
- [4] U.S. Department of Homeland Security. Office of Health Affairs website. About US&R [Internet]. 2011 [updated 2011 Aug 11; cited 2011 Nov 15]. Available from: <http://www.fema.gov/emergency/usr/about.shtm>
- [5] U.S. Department of Homeland Security. FEMA US&R Medical Specialist Training website. FEMA US&R response force: Task force medical team training [Internet]. 2011 [cited 2011 Nov 15]. 57 p. Available from: <http://www.fema.gov/pdf/emergency/usr/unit2.pdf>
- [6] National Association of State EMS Officials. NASEMSO website. Overview of AMR/FEMA Federal national disaster emergency medical services [Internet]. 2010 Oct 05 [updated 2011 Jun 3; cited 2011 Nov 15]. Available from: <http://www.nasemso.org/Projects/DomesticPreparedness/documents/AMR-FEMAcontractoverview2010-10-054page.pdf>
- [7] American Medical Response, Office of Emergency Preparedness. Credential verification – Disaster Response Team (DRT) [Internet]. 2011 [updated 2011 Jun 3; cited 2011 Nov 15]. Available from: <http://www.amr.net/Files/PDFs/DRT-Companies/DRN-Member-Qualifications-and-Credentials-Matrix.aspx>
- [8] U.S. Department of Homeland Security. Historical overview of DHS-FEMA grant programs awarded to U.S. colleges and universities [Internet]. 2010 Jun 8 [cited 2011 Nov 15]. Available from: http://www.fema.gov/txt/privatesector/pressroom/colleges_univ_grants_factsheet.txt

Department of Homeland Security (DHS)

- [9] U.S. Department of Health and Human Services. ESF#8 Pre-Scripted Mission Assignments (PSMAs) [Internet]. 2011 [updated 2011 May 11; cited 2011 Nov 15]. Available from: <http://www.phe.gov/Preparedness/planning/playbooks/rdd/Pages/subtask.aspx>
- [10] U.S. Department of Homeland Security. Emergency Support Function annexes: Introduction [Internet]. 2008 Jan [cited 2011 Nov 15]. Available from: <http://www.fema.gov/pdf/emergency/nrf/nrf-esf-intro.pdf>
- [11] U.S. Department of Homeland Security. CBP border patrol sends search and rescue resources to tornado-torn Georgia [Internet]. 2007 Mar 2 [cited 2011 Nov 15]. Available from: http://www.cbp.gov/xp/cgov/newsroom/news_releases/archives/2007_news_releases/032007/03022007_4.xml
- [12] U.S. Department of Homeland Security. ICE Health Service Corps [Internet]. 2011 [updated 2011 Nov 15]. Available from: <http://www.inshealth.org/>
- [13] U.S. Department of Homeland Security. Health care and public health critical infrastructure sector [Internet]. 2008 Dec 29 [updated 2011 Nov 15]. Available from: http://www.dhs.gov/files/programs/gc_1188490299862.shtm
- [14] U.S. Department of Homeland Security. U.S. Coast Guard. Coast Guard Medical Manual. Commandant Instruction (COMDTINST) M6000.1E [Internet]. 2011 May 16 [2011 Nov 15]. Available from: <http://www.uscg.mil/hq/cg1/cg112/pubs.asp>
- [15] U.S. Department of Homeland Security. DHS Directive 248-01. Medical Qualification Management. U.S. Department of Homeland Security; 2009. Department of Transportation (DOT)

THE DEPARTMENT OF TRANSPORTATION (DOT)

Introduction

The Department of Transportation (DOT) is the Coordinator and Primary Agency for ESF#1- Transportation, which assists with the provision of civilian and military transportation during an emergency.^[1] DOT is also designated as a Support Agency for ESF#8- Public Health and Medical Services.^[2]

DOT executes its NRF responsibilities through the Secretary's Office of Intelligence, Security and Emergency Response, which includes a detailed U.S. Public Health Service position within the office's structure.^[3] The office manages the Regional Emergency Transportation Coordination Program, which consists of a Washington, DC-based DOT Headquarters element and a team of DOT personnel from throughout the department located in each of the 10 Federal regions, and Alaska, and provides the framework for the performance of assigned tasks.^[4]

Each region of the country has a designated Regional Emergency Transportation Coordinator (RETCO), responsible for developing preparedness plans, conducting training, and coordinating with other DOT Operating Administrations, other Federal agencies such as FEMA, and non-Federal organizations in the region.^[4] The RETCO is also responsible for the administrative support of DOT individuals involved in regional emergency transportation operations. Each RETCO is assisted by at least one Regional Emergency Transportation Representative (RETREP). The RETREP is the principal assistant to the RETCO for the emergency transportation plans and programs in the region.^[4] Individual regions tailor their emergency transportation programs according to their specific needs and changing conditions. For example, in Region IX (which includes California, Nevada, Arizona, Hawaii, and Guam), there is a deployment package program designed to expedite the transportation of necessary supplies to Hawaii and the Pacific Island territories before, during, and after a disaster. Although the policy and procedural framework remains constant, an active regional structure allows DOT to customize its activities for local conditions and hazards.^[4]

Although it provides no public health or medical response capability under this function, DOT supports ESF#8 in two areas: transportation coordination through its role as the ESF#1 coordinator and, through the National Highway Traffic Safety Administration's (NHTSA's) Office of Emergency Medical Services (EMS).^[5] NHTSA works to reduce death and disability by providing leadership and coordination to the EMS community in assessing, planning, developing, and promoting comprehensive, evidence-based emergency medical services and 9-1-1 systems.^[5]

Transportation Support

When requested by HHS, as the ESF#8 Coordinator and Primary Agency, DOT performs three specific functions in its ESF#1 coordination role: provides a common operating picture of the transportation systems and infrastructure reflecting real time status and damage reports;

identifies alternative transportation solutions in partnership with private sector partners and, performs regulatory activities under its own direct authority relating to aviation, maritime, surface, railroad, and pipeline transportation. An example of coordination activities would be the Federal Aviation Administration's role in managing the national airspace, especially when priorities must be given to response and recovery activities. Actual contracting to arrange non-military types of transportation is performed by the logistics section of the Department of Homeland Security / Federal Emergency Management Agency.^[6]

DOT and the Department of Defense also manage the Civil Reserve Air Fleet (CRAF), a cooperative, voluntary program where civilian airlines contractually pledge aircraft to augment DoD capability during emergencies. CRAF air evacuation aircraft are modified civilian passenger aircraft that are staffed with civilian aircrews. When the need for airlift exceeds the capacity of DoD, CRAF airlines can, with 48 hours' notice, transport limited numbers of low criticality patients, non-medical passengers, and cargo pallets.^[6]

Emergency Medical Service (EMS) System Development

"The Highway Safety Act of 1966 required each State to have a highway safety program which complied with uniform Federal standards, including 'emergency services.' This provided the impetus for the National Highway Traffic Safety Administration's early leadership role in EMS system improvements. Initial NHTSA EMS efforts were focused on improving the education of pre-hospital personnel by developing and revising the National Standard Curricula (NSC) for First Responders, Emergency Medical Technician-Basics, Intermediates and Paramedics. Funding was also provided to assist States with the development of State EMS Offices. Subsequent NHTSA efforts were oriented toward comprehensive EMS system development and included, for instance, model State EMS legislation."^[7]

In 1998, NHTSA and the Health Resources and Services Administration (HRSA) jointly supported the development of the EMS education agenda for the future: a systems approach (Education Agenda), a vision for a more systematic approach to meet the needs of the current EMS system. The Education Agenda called for an integrated system of EMS regulation, education, certification, licensure, and educational program accreditation. "The Education Agenda promoted the development of five interdependent components: (1) the National EMS Core Content; (2) the National EMS Scope of Practice Model; (3) the National EMS Education Standards; (4) National EMS Education Program Accreditation, and (5) National EMS Certification. The Education Agenda called for all States to adopt National EMS Certification as the basis for EMS licensure, as well as, national accreditation of all EMS education programs."^[8]

The 2007 National EMS scope of practice model defines and describes four new levels of EMS personnel licensure: Emergency Medical Responder (EMR), Emergency Medical Technician (EMT), Advanced EMT (AEMT), and Paramedic. The 2009 National EMS Education Standards and Instructional Guidelines further define the roles, skill sets and knowledge base for each of the four new EMS personnel levels. The Education Standards are currently being implemented nationwide and will eventually replace the NSC.^[7]

"It is virtually impossible to create a scope of practice that takes into account every unique situation, extraordinary circumstance and possible practice situation. This is further complicated

by the fact that EMS personnel are an essential component of disaster preparedness and response. In many cases, EMS personnel are the only medically trained individuals at the scene of a disaster when other health care resources may be overwhelmed."^[7] This includes paramedics, one of the core occupational groups this study is focusing on with respect to the expectation of their response during natural disaster, including but not limited to competencies, standards and credentialing. "The Paramedic is an allied health professional whose primary focus is to provide advanced emergency medical care for critical and emergent patients who access the emergency medical system."^[7]

The Education Agenda calls for a single National EMS Certification agency and a single National EMS Education Program Accreditation agency, and calls for all States to adopt National EMS Certification as the basis for EMS licensure. In an October 2010 resolution the National Association of State EMS Officials (NASEMSO) recognized the National Registry of Emergency Medical Technicians (NREMT) as the national EMS certification agency.^[9]

As of 2005, 46 States and territories use NREMT exams as the basis for licensure at one or more levels. The NREMT has established a target date of 2013 by which paramedics applying for National EMS Certification must have graduated from a nationally accredited EMS education program.^[10]

Summary

The Department of Transportation (DOT) has been a key participant in the development and improvement of the Emergency Medical Services (EMS) system. EMS personnel are an essential part of disaster medical preparedness and response; often they are the first medically trained individuals at the scene of a disaster. This includes paramedics, one of the three core occupational groups this study is focusing on.^[9]

One of the key observations in this report is the major role NHTSA has had, in conjunction with the HHS Health Resources and Services Administration (HRSA), in the development of the EMS education agenda for the future: a system approach. The major objective of the EMS Education Agenda is to establish a national system of EMS education similar to that which exists for most other allied health professions.^[8] This approach improves the EMS licensure process and allows the competency in knowledge and skills needed to practice by EMS personnel to be standardized by completing a nationally accredited educational program and passing a national certification.^[8] Through these efforts there are now four new national EMS scope of practice levels: Emergency Medical Responder (EMR), Emergency Medical Technician (EMT), Advanced EMT (AEMT), and Paramedic.^[7] Additionally, several States have also created curricula specifically for the purpose of educating, and credentialing, nurses who wish to be EMS field providers.^[8]

References

[1] U.S. Department of Homeland Security. Emergency Support Function#1–Transportation annex [Internet]. 2008 Jan [cited 2011 Oct]. 10 p. Available from: <http://www.fema.gov/pdf/emergency/nrf/nrf-esf-01.pdf>

Department of Transportation

- [2] U.S. Department of Homeland Security. Emergency Support Function #8—Public health and medical services annex [Internet]. 2008 Jan [cited 2011 Oct]. 16 p. Available from: <http://www.fema.gov/pdf/emergency/nrf/nrf-esf-08.pdf>
- [3] U.S. Department of Transportation. Office of Intelligence, Security and Emergency Response website [organization chart; Internet]. 2010 [updated 2010 Apr 20; cited 2011 Oct]. Available from: <http://www.dot.gov/ost/oet/orgchart.htm>
- [4] U.S. Department of Transportation. Office of Intelligence, Security and Emergency Response. Regional Emergency Transportation Coordination website [Internet]. 2008 [updated 2008 Oct 23; cited 2011 Oct]. Available from: <http://www.dot.gov/ost/oet/retco.html>
- [5] U.S. Department of Transportation. National Highway Traffic Safety Administration / Office of Emergency Medical Services. Mission statement [Internet]. 2011 [cited 2011 Oct]. Available from: <http://www.ems.gov/>
- [6] U.S. Department of Homeland Security. Overview: ESF and support annexes coordinating Federal assistance in support of the National Response Framework. 2008 Jan [cited 2011 Oct]. 68 p. Available from: <http://www.fema.gov/pdf/emergency/nrf/nrf-overview.pdf>
- [7] U.S. Department of Transportation. National Highway Traffic Safety Administration / Office of Emergency Medical Services. National EMS scope of practice model [Internet]. 2007 Feb [2011 Oct]. 42 p. Available from: <http://www.nhtsa.gov/people/injury/ems/EMSScope.pdf>
- [8] U.S. Department of Transportation. National Highway Traffic Safety Administration / Office of Emergency Medical Services. EMS agenda for the future [Internet]. 1996 [cited 2011 Oct]. 106 p. Available from: http://www.ems.gov/pdf/2010/EMSAgendaWeb_7-06-10.pdf
- [9] National Association of State EMS Officials. Resolution 2010-04: National EMS certification and program accreditation [Internet]. 2010 Oct 15 [cited 2011 Oct]. Available from: <http://www.nasemso.org/documents/Resolution2010-04NationalCertificationandProgramAccreditation20101013.pdf>
- [10] National Registry of Emergency Medical Technicians website. History of the NREMT [Internet]. 2011 [cited 2011 Oct]. Available from: https://www.nremt.org/nremt/about/nremt_history.asp

NATURAL DISASTER HEALTH WORKFORCE NATIONAL CONFERENCE SUMMARY

Introduction

When the National Health Security Strategy was released in 2009, one of the ten objectives for creating more resilient communities and improving health and emergency response systems was "developing and maintaining the workforce needed for national health security."

A year earlier, the National Center was created as part of Homeland Security Presidential Directive #21 and tasked with being the home for "co-locating education and research... in domestic medical preparedness and response."

At the request of the Office of the Assistant Secretary for Preparedness and Response (ASPR), and in line with a strategic plan approved by the Federal Education and Training Interagency Group, its interagency advisory group, the National Center conducted a landscape analysis of the nation's natural disaster workforce supporting Emergency Support Function #8 (ESF#8).

Purpose and Approach

The workforce project was created with the purpose of describing the domestic disaster workforce – an assessment of *who* is part of the workforce in order to inform *what* kind of education and training they ultimately need. The study team analyzed selected occupations (physicians, nurses, and paramedics) within the medical disaster response workforce at the State, local, and Federal levels. The team conducted a literature review, semi-structured interviews, and a case study. Once the information collection was complete, NCDMPH held a conference to seek individual feedback on the case study methodology, selective findings, and thoughts on next steps to be taken.

The September 19-20, 2011 Natural Disaster Health Workforce National Conference was held in Crystal City, Virginia with the following three specific objectives:

- To contribute to selected aspects of the workforce report such as workforce supply, volunteerism, and barriers
- To consider input on next steps for additional case studies and for expanding the scope of the report beyond natural disaster
- To present the initial case study and seek feedback on the pilot case study methodology

Most of the conference was conducted using a working group / report-back approach. Invited speakers were interspersed in the agenda (included in Appendix C). During registration, attendees self-selected their working groups, each of which was led by a moderator. Within working groups, a wide-ranging group of doctors, nurses, military personnel, public health

practitioners, and emergency responders gathered to contribute their professional feedback on the conference objectives.

The three working groups were:

- Case Study
- Cross-Cutting Issues
- Future Plans

Group discussions were shaped through the use of audience response technology and summaries of the following discussions.

Case Study Group

The National Center chose to take a closer look at Los Angeles County, California emergency, and public health natural disaster response workforce as the pilot case study for the workforce report. This location and disaster scenario were chosen based on a number of factors. Focusing on a natural disaster was chosen in order to base the study on a frequently occurring domestic disaster (e.g., earthquakes, hurricanes), to concentrate on a location with long-existing preparedness efforts, and to select a locale reasonably accessible to workforce project staff. Thus, the two most fitting locales were California for earthquakes and Florida for hurricanes. The southern California area was selected due to its well-exercised and long-existing earthquake disaster response framework from which it was hoped a disaster health workforce could be identified. Specifically, the Southern California Catastrophic Earthquake Response Plan already identified many human resources (private sector, NGOs, local, state, tribal, and Federal) involved in an earthquake disaster response.^[1]

This case study was a cross-sectional sample of the county's disaster health workforce. Stakeholders were identified using snowball sampling methodology. This generated 20 interviews with 30 people representing key public and private health sector stakeholders in a disaster response. During the conference, the Case Study Working Group was prompted by pre-developed questions from NCDMPH to focus their discussion on critiquing the current case study methodology and offering suggestions for future case studies.

In terms of improving the LA County study, the group's main concern was the need for more detail on data collection and analysis methods used. Some members expressed concern about the reliability and interpretation of data collected with snowball sampling. There was also a concern raised about whether snowball sampling was the best method for a case study of this scope. It was recommended that alternative data gathering methods, other than snowball sampling, be considered.

Additional concerns about the data collected through a case study approach included:

- Double counting of staff or volunteers on response team rosters—there is no master personnel database, thus individuals may be counted as a member of many disaster response teams, leading to an overestimation of personnel available to respond

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- Data currency – data cited may reflect most recently reported disaster response team information, but it should be recognized that changes may have taken place since those data were collected
- Data accuracy – much of the data on rosters was self-reported, thus its accuracy and completeness is uncertain
- Actual availability of those who identify themselves as responders (illness or travel may prevent some individuals from being available, for example)

The following methodological recommendations were offered:

- Develop a list of potential agencies to interview based on roles / organizations and existing plans, then seek them out for data collection and compare this information with the expectations of pre-existing plans
- Consider looking at the *functional* roles in disaster response organizations or plans rather than the occupational or position title (use ESF#8 and local Emergency Operations Center as a guideline)
- Develop a standardized and replicable approach for determining the locations of future studies
- Use modeling and simulation to understand workforce needs and resource typing

Additional working group suggestions include:

- Broaden the occupation scope beyond specialties within physician, nursing, and first responder professions, such as including public health professionals
- Provide greater detail of emergency medical service (EMS) structure in the location being studied
- Identify the disaster health capability of the local facilities then parse their workforce capabilities
- Walk through a scenario with interviewed agencies to see where workforce gaps in services may occur
- Examine logistical resources other than workforce (such as transportation for disaster health responders)
- Survey who is realistically available to respond (identify constraints on individual responders), especially in terms of meeting the needs of vulnerable populations (e.g., children, undocumented immigrants, limited English proficiency, special needs)
- Consider using the case study as a basis for a table top exercise

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- Review after-action reports for capacities and capabilities
- In determining the locale for future case studies:
 - Focus on urban and rural areas, particularly in the Northeastern United States
 - Let the location dictate the type of disaster used
 - Consider using other types of natural disasters, beyond earthquakes, as the focal point of the framing scenario of the case study – the disaster type should relate to types of disasters likely to occur in the chosen locale.

The National Center plans to take this input under consideration and, along with those proposed by the Future Plans Group, use them to shape the structure, methodology, and purpose of future case studies.

Cross-Cutting Issues Group

The Cross-Cutting Issues Group was asked to engage in discussion surrounding the issues of volunteerism. Influencing and restraining factors accompanying a volunteer workforce were discussed and debated by the group. Perhaps the biggest debate of the group centered on the actual definition of a "volunteer." Although a number of different opinions were discussed, the group generally agreed that, for the purposes of this discussion, a volunteer should be defined as it is in the Volunteer Protection Act (Public Law 105-19-June, 1997). This act states the following:

VOLUNTEER.– The term "volunteer" means an individual performing services for a nonprofit organization or a governmental entity who does not receive–
(A) compensation (other than reasonable reimbursement or allowance for expenses actually incurred); or
(B) any other thing of value in lieu of compensation, in excess of \$500 per year, and such term includes a volunteer serving as a director, officer, trustee, or direct service volunteer.

The group did not feel this definition was truly all-inclusive since there are many "volunteer" positions that, once activated, become a paid position. The group felt that more expansive illustrations of the different types of volunteers would be helpful in understanding this workforce; however, this was felt to extend beyond the scope of the group's tasking for this conference.

Influences and Barriers to Volunteerism

Personal and family safety was perceived as a major element that could act as either a positive or negative influence to volunteerism. In basic terms, the group felt that Maslow's theory of human motivation informs how individuals will behave if faced with a choice of whether or not to volunteer in a disaster response scenario. The basis of the theory is the importance of satisfying lower level needs before higher order needs can be addressed. In this case, the group felt that personal and family safety needs must be satisfied before a volunteer would be able and willing to participate in a disaster response effort. To this end, the ability to adequately capture the

number of potential volunteers within this workforce would be difficult based upon the type of disaster, who was impacted, and the extent of the impact.

Once an agreed-upon definition was established, the group was able to focus on some of the biggest barriers to volunteerism. A common theme during this discussion, and would continue to be brought up over the two days, was the idea of personal barriers versus systemic barriers. For every issue discussed, there are barriers for the individual to overcome, as well as barriers for the emergency preparedness and response framework as a system to overcome.

Communication was cited as another key influence or barrier to establishing a volunteer workforce. Many members expressed the feeling that organizations need to maintain effective communication in order to have a high level of engagement from their volunteers; people who have not heard from an organization in over a year are not very likely to feel compelled to respond when they are called upon to volunteer, however, if a volunteer receives regular communication from the organization, they probably feel like a more active member of the team. The Medical Reserve Corps was cited as a positive example of an organization using communication and branding efforts to reinforce the concept that individual members are part of a team, are valued and are needed.

Clear roles and responsibilities for volunteer responders were also identified as both an influence and a barrier. Volunteers need to feel assured by incident management leadership that they will be properly utilized in the event of a disaster. Too often, group members felt that volunteers are called upon to respond without leadership really assessing what *kind* of volunteers are needed. Overwhelmingly, the group felt that a better job needs to be done in assuring that incident command leadership does a top-notch job of assessing the situation, identifying what they need in terms of personnel, equipment and supplies, and then matching personnel effectively to the situation at hand.

Issues in the Vetting Process

When discussing challenges relating to the vetting process for volunteers, the group members expressed concerns regarding liability. The first concern was that the majority of the public is unaware of the extent or non-extent of liability protections and further investigation and publication is needed in this area. Credentialing was listed as the second major area of concern; it was the consensus of the group that at the agency level and personal level, even with the credentialing verification used by the Emergency System for Advance Registration of Volunteer Health Professional, problems still exist. Items of concern included:

- Re-verification of credentials at the hospital-level is difficult
- Personal accountability of ensuring proper verification is difficult to measure and assess

Issue of Volunteer Preparedness

When discussing the level of preparedness of volunteers who arrive at a disaster, many participants expressed the sentiment that every disaster is different, so full preparation is really an impossible task. However, individuals also emphasized that more intense effort should be placed upon the concept of "train as you fight." With challenging economic times and budget constraints impacting training budgets, large multi-agency exercises simulating "real world"

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disasters are becoming something of the past. Concern was expressed that if we do not continue to train together, we will never develop the capabilities that must come naturally during a real word event.

With this in mind, a number of recommendations for improving the preparedness of volunteers were offered, including:

- If something is established – whether it’s a procedure, a system, a method of communication or anything else – it needs to be used. It does not do anyone any good, particularly volunteers, to create something and then forget about it upon arriving at the scene.
- Disaster response leadership needs to embrace just-in-time training
- Behavioral support of the volunteer workforce needs to be emphasized

Sustainment of Workforce

When it came to discussing how to ensure the sustainment of the workforce, effective communication and worker safety again proved to be the underlying needs, resulting in the following suggestions:

- Ensure the mental health of the workforce – this includes having a team member dedicated to monitoring the team’s mental health
- Ensure worker safety – if a member does not feel safe, they will not respond again
- Regulate the hours volunteered during a response – volunteer responders must work in shifts in order to rest and decompress mentally
- Use the volunteers – workers must actually be called upon to respond – and in the proper role

Although not as much time was spent on the issues of *dealing with surge capacity, making human resource decisions* and *requesting individual skills versus entire teams*, a few baseline conclusions were drawn, including:

- A successful surge capacity response needs an accurate needs assessment upfront to determine what scale and scope is necessary
- Human resource decisions cannot be made without accurate national workforce EMS data - human resource definitions need to be established and national agencies need to adopt those common definitions
- The biggest problem with requests for individuals versus entire teams, and requests in general, is matching up correct resources with correct requests – this reflects directly on the need for pre-existing relationships and common understanding between leadership from different organizations

The Cross-Cutting Issues Group had the difficult task of addressing needs across a wide variety of issues affecting the workforce, but ultimately, its discussions will be most helpful.

Future Plans Group

The Future Plans Group was convened in order to discuss what immediate future plans should be made for the workforce study and what long-term plans, if any, should NCDMPH undertake to continue the examination of the domestic disaster health workforce.

Immediate Future Plans

Overall, the Future Plans Group was satisfied with the baseline data presented in the initial draft of the workforce report and felt that it accurately defined the workforce as it currently exists. Concerning the report's organization, stated purposes, and approach, the following suggestions were made:

- The main section of the report's purpose should be stated in two objectives:
 - Who is the workforce, how does it change over time and what are its expectations?
 - What are the capabilities for each level of the workforce?
- Data on the five departments (Department of Defense, Department of Homeland Security, Department of Health & Human Services [HHS], Department of Veterans Affairs, and Department of Transportation) should be organized as appendices
- The case study should outline how the workforce is mobilized and utilized at the local level, as well as who actually will show up in the event of a disaster
- Consider utilizing other forms of sampling in future study methodologies

Long-Term Future Plans

After making these recommendations for the current study, the group then had to decide whether or not there was value in the NCDMPH extending this study in the future and, if so, who would be the coordinating agencies in charge of organizing such a study.

Based on the value obtained from the initial workforce study, the Future Plans Group proposed the following:

- ASPR within HHS should be the Federal lead agency in charge of ensuring the workforce study is repeated every three to five years to ensure its needs are met:
 - ASPR should receive data from the other agencies
 - ASPR should seek participation from the Bureau of Labor Statistics
- There should be an increased focus on the issue of "double counting" of workforce personnel
- Future studies should outline how to request personnel data and how to move human resources around the country
- Data obtained should be used to validate education and training requirements

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- Some group members want to use the collection of disaster health workforce data for conducting hypothesis-generating studies

Conclusion

The National Center greatly appreciates the passion displayed by the working group members when discussing the varying issues related to its disaster workforce study. The comments, criticisms, and suggestions are being taken into consideration for inclusion in the disaster health workforce report.

The National Center created this summary with the intent of condensing two days of intense discussion into a summary document, but in no way does it seek to represent the full discussions in the conference. Rather, this summary reflects key points identified by the working group moderators and the National Center's staff.

The NCDMPH's full report on the disaster health workforce will be available online this fall.

References

- [1] California Emergency Management Agency. Southern California Emergency Response Plan [Internet]. 2011 [cited 2011 Nov 14]. Available from: <http://www.calema.ca.gov/TrainingandExercises/Documents/So%20Cal%20Cat%20Earthquake%20Response%20Plan.pdf>

DISCUSSION

Introduction

This report characterizes that portion of the healthcare workforce expected to respond to a domestic catastrophic natural disaster as examined in the case study (i.e., an earthquake). Through follow-on work by the National Center, the study will support Strategic Objective #2 of the National Health Security Strategy: "Develop and maintain the workforce needed for national health security." Describing the disaster health workforce in this study lays the foundation for the National Center to more thoroughly focus on the learning aspects of human capital development. It is insufficient to attempt to describe the disaster health workforce through document analysis or occupational data analysis alone, therefore a workforce landscape analysis using a multi-method approach was conducted.

The disaster health workforce was examined on two levels: **organizationally**, focusing on those teams established at the local / State government and private sector healthcare level through the case study and the Federal level through the five analysis sections addressing designated Emergency Support Function #8 departments and **occupationally**, focusing on three main groups (Physicians, Nurses, and First Responders) which were further sub-selected as emergency physicians and nurses, critical care physicians and nurses, and paramedics as examined in the occupational group analysis. This discussion section addresses issues identified or derived from the preceding sections that are considered significant to understanding the disaster health workforce, and also considers the contributions and limitations of this study.

Aging and Supply of the Workforce

An examination of the disaster health workforce must consider the impact of demographics. American Medical Association data indicates that nearly 37% of physicians in 2009 are under the age of 45, with 22.7% being between the ages of 45-54 and women composing a larger proportion of this age group, and 20.7% being 65 years of age or older.^[1] The healthcare workforce is aging, and that will impact the number of available providers physically capable of working in a disaster environment.

Shortages of 100,000 physicians and 300,000 to 1 million nurses are projected in the next 10 years.^[2] The number of new physician assistant graduates is projected to decline by 25% by 2010 and emergency medical technicians and paramedics will only experience a 9.0% increase.^[3] Concurrently, the US population increased to 281.4 million, a 13.2% increase from the 1990 census population of 248.7 million (Census).

Compounding the shortage is the increasing demand for healthcare as the baby boom generation ages. The US Census Bureau estimates the number of Americans over the age of 65 will double by 2030, demanding more medical services and accounting for a disproportionate share of hospitalizations, procedures, and high-intensity services.^[4] This increase in demand for services

Discussion

and aging of the general healthcare workforce will create a severe personnel deficit. An estimated 3.2 million new wage and salary jobs will be generated in healthcare between 2008 and 2018 but the civilian labor force will only increase by 12.8 million persons.^[5] Healthcare will be competing for workers from a smaller pool and by 2025 there will be a 260,000 full-time equivalent shortage of registered nurses (RN) as a result of a large baby-boom RN cohort retiring and smaller cohorts of post-boom nurses.^[6]

As an example, emergency physicians are one of the specialties examined in the occupational group analysis section of this report. The increase in demand for emergency room access has been accompanied by a shortage of physicians trained and certified in emergency medicine.^[7] The microcosm dynamics of emergency rooms reflects the issues facing healthcare as a system--decreased capacity, shortage of trained physicians and nurse staffing, and the increasing demand from an aging baby boom population are straining resources.

Emergency physicians are a critical component of the disaster response workforce. They possess the capabilities and skills important to medical disaster response. It is estimated that 12% of emergency physicians will retire in the next few years.^[8] This worsens the current emergency physician workforce deficit. New emergency medicine certified physicians will replace those who retire, but the supply will not meet demand.^[9] The supply and demand mismatch is compounded by poor job satisfaction. In 2005, only 58% of the needed emergency physicians were satisfied, as 1.3 physicians per emergency department leave the practice annually.^[7,8,10] Geographic relocation, better pay, and a less stressful working environment are main reasons for physicians leaving emergency medicine.

In 2010, the number of nurses employed full time in the United States increased by 476,000; of these, 368,000 (77%) were ages 50 or older.^[11] Nurses are working more hours, moving into hospital settings where wages are higher, and, in many cases, delaying retirement. Although this has temporarily lowered job vacancy rates for nurses in many settings--the longer term impact on the nursing workforce appears adverse. The aging population, other career options for women, responses to health care cost pressure, wages, workload, and work environment will begin to decrease the availability of the nurses.

As the population ages the demand for nurses will increase, intensifying the shortage. Poor pay, long hours in intense and stressful environments, and little control over hours worked are reasons nurses leave the profession along with the requirement to remain at work should an emergency occur.^[12]

Intensity of care and staffing levels are issues that impact the emergency department nursing workforce. While new graduates are filling more positions and inexperience creates a quality of care issue, the retention of experienced nurses remains a significant challenge.^[8] The impact of an aging medical workforce along with the increasing demand for services from an aging general population will impact the available capabilities of the medical and public health systems to meet and respond to the needs of populations impacted by natural disasters.

Will Volunteers Respond?

As discussed in the preceding sections, a large component of the disaster health workforce responding to a domestic natural disaster is comprised of volunteers. Aspects of the volunteer disaster response workforce have been examined in terms of willingness to serve, recruitment efforts, and the experiences of specific providers and teams.^[13-17] Additionally, recruitment, credentialing, and response time have been examined to understand the influences that affect medical response and surge capability.^[15, 18, 19] Response issues pertaining to specific disaster types have been studied, including Hurricane Katrina, floods, fire, and pandemics.^[14, 20-44]

The underlying assumption of the response capability has been that all volunteers will be willing to respond when called to action. A systematic review of the literature to determine willingness of health care personnel to work in disaster environments found that several factors impact the workforce.^[45] The type of disaster and concern for family and pets were the significant factors in influencing volunteers' willingness to serve. Training related to biological, chemical, and radiological events increased the likelihood of medical personnel to respond. There was also a greater willingness to serve if their participation was valued.

Personnel in hospitals have been studied for disaster response surge requirements and their willingness to serve. The responsiveness of medical personnel to serve in a crisis was found to be a function of the event type and the training they have received.^[14, 15, 45, 46] In a survey of hospital employees at nine hospitals in five states, 87% were willing to work after a mass casualty incident of a defined nature such as a fire or collapse or natural disaster such as a snowstorm (83%); flood (81%); hurricane (78%) or flu epidemic (72 %). However, respondents indicated they were less willing to respond to a man-made disaster such as a biological event (58%), chemical event (58%) or radiation event (57%). A minority but important proportion of respondents (21%) reported a conflicting emergency response obligation.^[13] Individuals were more willing to respond to weather-related disasters than chemical threats or pandemics. Training in the delivery of medical care in chemical attacks increased the likelihood of medical personnel being willing to respond.

A survey of four health department regions was conducted to determine the willingness of public health workers to respond to a pandemic event. The survey indicated those who perceived a high threat, but were competent and felt their roles were important to the response, were more willing to respond, no matter the threat level.^[14]

Hawaiian healthcare providers were surveyed to identify recruitment characteristics for the Medical Reserve Corps (MRC).^[15] The study found that female providers were more likely to demonstrate an interest in joining the MRC, and as a general category physicians and dentists were least willing of all professional groups to volunteer. Time commitment, organization and management of the teams, training and continuing education credits, concern for safety of family, professional liability protection, and competing obligations were identified as factors that influenced decisions to participate.

Availability of medical personnel to staff surge requirements is influenced by providers' willingness to serve in this higher threat setting and their perceived security about how to deal with the various types of manmade and natural disasters. The human resource component is viewed as the rate limiting element of medical and disaster planning.^[47] Understanding who will be available to serve, their skills, and capabilities will greatly enhance response capacity. Hospitals' development of emergency department and in-patient surge plans is often limited by nursing capacity. To partially address this gap, Reilly and Markenson compared the competencies of the U.S. Department of Transportation (DOT) National Standard Curriculum for the Emergency Medical Technician-Paramedic to competencies and criteria for board certification as a Certified Emergency Nurse and Critical Care RN and found that paramedics had the necessary competencies to provide emergency and critical care nursing surge capability.^[47]

"Double Counting" of Volunteers

"Double counting" of volunteers is another reason a volunteer might seemingly not respond. During research for this report, especially while conducting the case study, it was determined there is no deliberate top-level mechanism in place to reliably identify which volunteers belong to more than one disaster health response organization. Natural disaster health professionals may already work in a profession where they are required to respond to natural disasters as a part of their primary job, but may also belong to one or more disaster emergency volunteer groups. As a result, the number of people available to respond to a natural disaster may be overrepresented in team rosters since they are likely to be counted more than once as a natural disaster responder. When called, these volunteers might have already responded with another organization. While the individual *does* respond, he or she is likely to have been counted more than once if more than one of the organizations they belong to is asked to identify their membership totals as part of disaster workforce planning and no by-name comparison is conducted. Research did not indicate that "by-name comparison" is conducted on a uniform basis or among the various levels or types of response organizations, to include the private sector.

Aspects of Disaster Health Workforce Professionalism

Each component of the disaster health workforce (Federal, State, and local government as well as the private sector) establishes or must comply with rules and regulation, either established within the profession or in response to standards and laws, , as discussed in the earlier sections of this report. These can be grouped into the following four interrelated topics:

- **Training and Education:** Components require a minimum level of training or education for initial entry into the workforce. This can be from recognized external sources (e.g., medical or nursing schools), internal sources (e.g., initial training programs conducted within the Department of Defense [DoD] for medical personnel), or completion of approved courses of study such as the Emergency Medical Services National Standard Curriculum issued by the Departments of Health and Human Services (HHS) and DOT. Follow-on training consisting of both refresher and additional, advanced courses are also available, either on a required or voluntary basis and can be conducted at the individual or unit / team level as is done in DoD

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and HHS, while education is done on an individual basis. Healthcare facilities establish internal training programs in order to meet requirements of the Joint Commission (formerly the Joint Commission on the Accreditation of Healthcare Organizations) for accreditation and certification; additionally, the members of the facility staff pursue individual efforts to meet continuing certification and licensure requirements.

- **Competencies and Standards:** The role a member of the disaster health workforce performs informs the expected competencies and the individual standards of performance. These also exist at the organizational level. These can be derived from a multitude of detailed hierarchical documents as is found in DoD, or can be locally developed and tailored to a specific small organization, as is the case with HHS MRC units, which do not have a standardized organizational structure and are encouraged to complete a basic level of competency-based training. Additionally, competencies and standards of a sponsoring organization can be adopted at the team level, as is done by local organizations participating in the Federal Emergency Management Agency's Urban Search and Rescue program, or at the individual level, as is done by individuals joining one of HHS' National Disaster Medical System (NDMS) teams.
- **Credentialing and Licensure:** Each component of the disaster health workforce establishes its own procedures for verifying, accepting, and tracking a member's credentials (e.g., board certification) and licensure upon entry to the workforce and subsequent renewals to maintain currency in both. These requirements may be promulgated separately or included in directives, regulations, or other documents that address one or more of the previously addressed topic areas. Examples within HHS include: requiring USPHS officers to have a current unrestricted professional license, certification, or registration in their own profession, and further requiring those who wish to deploy in a clinical role to also practice a minimum of 80 hours per year in that role; requiring MRC personnel to have an active medical professional license in order to deploy; and establishing four "Credential Levels" for Emergency System for Advance Registration of Volunteer Health Professionals (as previously defined in Table HHS-11). The Department of Veterans Affairs (VA) conducts certification and license verification as a condition of employment through Veteran Health Information System and Technology Architecture; it then uses the Disaster Emergency Medical Personnel System to validate this information as part of a volunteer's screening process in order to deploy as part of a disaster response team. The National EMS Scope of Practice Model which is a part of the EMS Agenda for the Future developed by HHS and DOT now define four new levels of EMS personnel licensure: Emergency Medical Responder, Emergency Medical Technician (EMT), Advanced EMT, and Paramedic. This scope of practice model serves as a tool for states to use so as to encourage national consistency of EMS licensure level. As of now, each State has the statutory authority and responsibility to regulate EMS within its borders, and to determine the scope of practice of State-licensed EMS personnel.
- **Privileging and Liability:** Each component establishes its own unique privileging rules, which are implemented and may be further defined by the organization's subordinate elements (e.g., the individual Services within DoD, individual treatment facilities within VA,

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and individual hospitals within a healthcare system). Liability is also dependent upon the individual component, both for day-to-day as well as disaster response operations, such as the coverage provided by the Federal Tort Claims Act and "Feres Doctrine" for Federal personnel, the Federal Volunteer Protection Act of 1997, the Emergency Management Assistance Compact for State-to-State assistance, individual State-level provisions, or other statutes (e.g., "Good Samaritan" laws).

These professionalism topics are interrelated with each other (i.e., a provider must be *trained and educated* to meet and demonstrate designated *competences and standards* in order to become *credentialed and licensed*, which is required in order to be *privileged* and have the attendant *liability* protection). They should be taken into account when considering the professional development of the disaster health workforce to assure the end result is a disaster health professional capable of providing the required level of care during disaster response and recovery.

Additional Cross-Cutting Observations

The need for identifying and maintaining visibility of health specialists is not supported by the frequent use of generic medical position titles (e.g., "physician / surgeon" or "nurse") in response team organization tables which, while often practical, limits the ability to rapidly identify specialty capabilities required for the disaster health workforce and, once the available workforce resources are categorized, identify shortages by specific specialty. Notably, this is usually not the case for the emergency medical service component of the workforce: as "Emergency Medical Technician – Basic [or Advanced]" or "Paramedic" is typically and specifically identified.

Research regarding the various response teams supports the finding that response teams are structured to deploy and work as self-contained (often independent) units. Research also identified that supported localities may often only require a subset (e.g., a "Strike Team" drawn from a larger NDMS team) with specific specialists rather than the entire team. The response time for this subset may be adversely affected by the requirement to obtain specialist information not readily available in order for the subset to be created and deployed. Reasons for the requirement to only send a specialist subset may include financial considerations, the desire to avoid introducing excess capability that might be better used elsewhere or kept in reserve to address changing circumstances, or to conserve working space within the affected area which may be required for other, more necessary assets. Similarly, local and State coordinating agencies may delay the request for additional help when faced with having to accept a much larger response team than they need, want, or can support.

Day-to-day healthcare for the majority of the public is provided by the private sector. Disaster health response is primarily a government-driven public / private partnership, which does not provide a pre-planned, integrated situational awareness, or resource management capability for workforce composition. Workforce composition awareness at an appropriate level of specificity and capability would allow the early identification of potential / impending shortages outside of the team level. A related issue is that a lack of competency knowledge across responding agencies and levels of government may initially inhibit the efficiency and effectiveness of

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personnel from different parent organizations working together, to include integrating subsets of larger teams (resulting in what could be called a "pick-up" team).

Additionally, an individual might not be employed in the most efficient or effective manner. During data collection, an example was posed regarding a surgeon volunteering to assist in a disaster and being detailed as part of a triage team rather than a surgical team. While the surgeon should be competent to conduct triage, is this the best use of his / her surgical skills at that time? This also identifies a related concern regarding workforce specialty situational awareness and management: research did not identify the existence of a multi-level mechanism to identify the various specialties present as a whole in the disaster health workforce to readily identify shortages and ensure that personnel are being employed in the role best supporting the overall performance of the workforce.

In the event of a multi-jurisdiction disaster response, the ability to develop an accurate, centralized responder database which provides real-time verification of initial certification and licensure of the health profession workforce will be a significant task. Maintaining such a database to provide an updated capability will be difficult. This limits the ability for ESF#8 - Public Health and Medical Services - leadership at various levels to have reliable comprehensive workforce-focused situational awareness, which may limit their ability to accurately manage the workforce above the individual response unit (e.g., NDMS team, state National Guard medical unit, or MRC Unit) level. This can delay the ability to identify occupational shortages prior to the shortage becoming critical, which then delays the identification of individuals who are engaged in activities not requiring their specialty (e.g., a surgeon providing triage screening because he or she is the only qualified medical professional at his / her location) who can be reassigned or request additional specific specialists to address the shortage. Whether as a pre-emptive or response capability, such a database would be a valuable additional ESF#8 workforce management resource. Additionally, such a database could also assist in on-scene "just-in-time" training management.

Contributions & Limitations

During the preparation and review of this report, both the study team and the stakeholder community identified areas of strength and opportunities for improving future reports. These are summarized below:

Contributions

Research identified a lack of disaster medicine (as opposed to public health) workforce-related literature. Evidently this is the first time a study of this type has been attempted, at least to this scale and breadth, specifically focusing on the medical side of the disaster health workforce.

A wide-latitude of discovery was utilized in the preparation of this report as its scope spans Federal, State, and local levels of disaster response. In support of this broad perspective, a combination of qualitative and quantitative methods was applied.

Discussion

Extensive consultation and fact-checking occurred. Three draft reports were released for review, comment, and fact-checking. Expert stakeholders were used to increase the accuracy and validity of the data.

The case study was based on a high probability event in a location with a mature response structure to allow reasonable expectation of subject matter experts and reference material. It discussed the natural disaster workforce at the local and State level in relation to Los Angeles County (including jurisdictions within the county borders), and considered volunteer groups, programs, and networks managed by government agencies. The case study also provided insight into the workforce, obtained from snowball sampling, within fire departments, hospitals, and community-based organizations, thus providing a broader picture of the actual (versus theoretical) public and private sector natural disaster health workforce.

The conference provided transparency regarding the conduct of the study and allowed additional feedback from stakeholders in a collegial, multi-agency environment rather than just a single agency-only review and comment process.

Limitations

This report is limited to a descriptive analysis of the disaster health workforce and does not attempt to address functional capabilities, tracking, volunteer recruitment and retention, or other challenges (e.g., funding) faced by the disaster health response community.

The nation's health system is a decentralized combination of private and public components. As a result, it makes workforce structural detail and subject matter expertise more widely dispersed among multiple government, private sector, and association resources.

The disaster health response organizational structure is continually evolving, therefore the composition and knowledge requirements of the workforce are continually changing. The data contained in this report provides a snapshot of the workforce at the time it was collected and does not account for any subsequent changes, such as emerging or revised government policies, new or modified organizational structures, or fluctuation in disaster responder availability. Despite exhaustive efforts to ensure the most up-to-date information in this report, the currency and accuracy of information may be somewhat uneven because some agencies were able to provide current updates while others were less able to do so.

The occupational group analysis was unable to identify the total number of responders interested in volunteering during a disaster since that is a personal decision made by the individual. Additionally, it was not able to address an individual's availability to respond should they desire to volunteer during a specific disaster since that is event-driven. "Double counting" could not be addressed in great detail since that information is not reported to the organizations sponsoring the volunteers.

Los Angeles County has unique features such as a mature well-established disaster response workforce, high population density, and large geographic area. Because of these features and the

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cross-sectional nature of the study, data was sampled for practical reasons, thus the findings of the case study are not generalizable to other regions or cities.

While the intent of the case study was to focus the interviews on catastrophic earthquakes, in the course of conducting the interviews it was determined that stakeholders prefer to speak about more recent and familiar events (primarily the H1N1 influenza) instead of a theoretical scenario, even one as likely for their region as an earthquake. Accordingly, future data collection from stakeholder interviews will probably need to be conducted differently, such as a scenario-based tabletop exercise.

References

- [1] Bureau of Labor Statistics. Bureau of Labor Statistics website [Internet]. 2010 [cited 2010 Dec 13]. Available from: bls.gov.
- [2] Garson Jr A. Leveraging the health care workforce: What do we need and what educational system will get us there? *Acad Med*. 2011; 86(11).
- [3] Bureau of Labor Statistics. Bureau of Labor Statistics website [Internet]. 2010 [cited 2010 Dec 13]. Available from: bls.gov.
- [4] Census B. Age data of the United States [census statistics; Internet]. 2010 [cited 2010 Dec 13].
- [5] Bureau of Labor Statistics. BLS national employment matrix, 2008-18 [Internet]. 2010 [updated 2010 Feb 2; cited 2011 Oct]. Available from: <http://www.bls.gov/oco/cg/cgs035.htm>.
- [6] Buerhaus PI, Auerbach DI, Staiger DO. The recent surge in nurse employment: Causes and implications. *Health Aff (Millwood)*. 2009; 28(4): w657-68.
- [7] Ginde AA, Sullivan AF, Camargo Jr CA. National study of the emergency physician workforce, 2008. *Ann Emerg Med*. 2009; 54(3): 349-59.
- [8] Counselman FL et al. A study of the workforce in emergency medicine: 2007. *Am J Emerg Med*. 2009; 27(6): 691-700.
- [9] Schneider MS, Gardner FA, Weiss DL, Wood PJ, Ybarra M, Beck MD. The future of emergency medicine. *Ann Emerg Med*. 2010 Aug; 56(2): 178-83.
- [10] Ginde AA et al. Regionalization of emergency care future directions and research: Workforce issues. *Acad Emerg Med*. 2010; 17(12): 1286-96.
- [11] McIntosh BR, Val Palumbo M, Rambur BA. An aging nursing workforce necessitates change. *Am J Nurs*. 2010; 110(12): 56-8.

Discussion

- [12] Keenan P. The nursing workforce shortage: Causes, consequences, proposed solutions. *Issue Brief. Commonw Fund.* 2003; (619): 1-8.
- [13] Cone DC, Cummings BA. Hospital disaster staffing: If you call, will they come? *Am J Disaster Med.* 2006; 1(1): 28-36.
- [14] Barnett DJ et al. Gauging U.S. emergency medical services workers' willingness to respond to pandemic influenza using a threat- and efficacy-based assessment framework. *PLoS One.* 2010; 5(3): e9856.
- [15] Qureshi K, Gershon RM, Conde F. Factors that influence Medical Reserve Corps recruitment. *Prehosp Disaster Med.* 2008; 23(3): s27-34.
- [16] Cohen SS, Mulvaney K. Field observations: Disaster Medical Assistance Team response for Hurricane Charley, Punta Gorda, Florida, August 2004. *Disaster Manag Response.* 2005; 22-7.
- [17] Government Accountability Office. September 11: HHS needs to develop a plan that incorporates lessons from the responder health programs. 2008.
- [18] Schultz CH, Stratton SJ. Improving hospital surge capacity: A new concept for emergency credentialing of volunteers. *Ann Emerg Med.* 2007; 49(5): 602-9.
- [19] Stratton SJ, Tyler RD. Characteristics of medical surge capacity demand for sudden-impact disasters. *Acad Emerg Med.* 2006; 13(11): 1193-7.
- [20] Mace SE, Jones JT, Bern AI. An analysis of Disaster Medical Assistance Team (DMAT) deployments in the United States. *Prehosp Emerg Care.* 2007; 30-5.
- [21] Lister SA. Report to congress. The public health and medical response to disasters: Federal authority and funding. *Congressional Research Service;* 2008.
- [22] Government Accountability Office. Catastrophic disasters: Enhanced leadership, capabilities, and accountability controls will improve the effectiveness of the Nation's preparedness, response, and recovery system. 2006.
- [23] Weiss RI, McKie KL, Goodman RA. The law and emergencies: Surveillance for public health-related legal issues during Hurricanes Katrina and Rita. *Am J Public Health.* 2007; 97 Suppl 1: S73-81.
- [24] Bernard M, Mathews PR. Evacuation of a maternal-newborn area during Hurricane Katrina. *MCN Am J Matern Child Nurs.* 2008; 33(4): 213-23.

Discussion

- [25] Best R. Overcoming disaster: Thibodaux regional medical center takes action in the aftermath of Hurricane Katrina. *Health Manag Technol*. 2007; 28(7): 24-5.
- [26] Blackwell T, Bosse M. Use of an innovative design mobile hospital in the medical response to Hurricane Katrina. *Ann Emerg Med*. 2007; 49(5): 580-8.
- [27] Brevard SB et al. Analysis of disaster response plans and the aftermath of Hurricane Katrina: lessons learned from a level I trauma center. *J Trauma*. 2008; 65(5): 1126-32.
- [28] Colias M. Hurricane Katrina: The disaster after the disaster. *Hosp Health Netw*. 2005; 79(10): 36-38; 40; 42.
- [29] Klein KR, Nagel NE. Mass medical evacuation: Hurricane Katrina and nursing experiences at the New Orleans airport. *Disaster Manag Response*. 2007; 5(2): 56-61.
- [30] Laditka SB et al. Providing shelter to nursing home evacuees in disasters: Lessons from Hurricane Katrina. *Am J Public Health*. 2008; 98(7): 1288-93.
- [31] McClain TC et al. Opportunity missed: A lesson learned from evacuating mentally ill patients following Hurricanes Katrina and Rita. *Acad Psychiatry*. 2007; 31(3): 188-189.
- [32] Potash MN et al. Pain management after Hurricane Katrina: Outcomes of veterans enrolled in a New Orleans VA pain management program. *Pain Med*. 2009; 10(3): 440-46.
- [33] Rodriguez H, Aguirre BE. Hurricane Katrina and the healthcare infrastructure: A focus on disaster preparedness, response, and resiliency. *Front Health Serv Manage*. 2006; 23(1): 13-23; 25-30.
- [34] Ruckart PZ et al. Hazardous substances releases associated with Hurricanes Katrina and Rita in industrial settings, Louisiana and Texas. *J Hazard Mater*. 2008; 159(1): 53-57.
- [35] Slepiski LA. Emergency preparedness and professional competency among health care providers during hurricanes Katrina and Rita: Pilot study results. *Disaster Manag Response*. 2007; 5(4): 99-110.
- [36] Springgate BF et al. Rapid community participatory assessment of health care in post-storm New Orleans. *Am J Prev Med*, 2009; 37(6 Suppl 1): S237-43.
- [37] Thomas J, Lackey N. How to evacuate a psychiatric hospital: A Hurricane Katrina success story. *J Psychosoc Nurs Ment Health Serv*. 2008; 46(1): 35-40.
- [38] Belardo S et al. A microcomputer-based emergency response system*. *Disasters*. 1983; 7(3): 215-20.

Discussion

- [39] Clinton JJ et al. Lessons from the Georgia floods. *Public Health Rep.* 1995; 110(6): 684-88.
- [40] D'Amore AR, Hardin CK. Air Force expeditionary medical support unit at the Houston floods: Use of a military model in civilian disaster response. *Mil Med.* 2005; 170(2): 103-08.
- [41] Barnett J, Dennis-Rouse M, Martinez V. Wildfire disaster leads to facilities evacuation. *Orthop Nurs.* 2009: 17-20.
- [42] Hoyt KS, Gerhart AE. The San Diego County wildfires: Perspectives of healthcare providers [corrected]. *Disaster Manag Response.* 2004; 2(2): 46-52.
- [43] Felland LE et al. Developing health system surge capacity: Community efforts in jeopardy. *Res Briefs.* 2008; (5): 1-8.
- [44] Lurie N et al. Community planning for pandemic influenza: Lessons from the VA health care system. *Disaster Med Public Health Prep.* 2008; 2(4): 251-57.
- [45] Chaffee M. Willingness of health care personnel to work in a disaster: An integrative review of the literature. *Disaster Med Public Health Prep.* 2009; 3(1): 42-56.
- [46] Qureshi K et al. Health care workers' ability and willingness to report to duty during catastrophic disasters. *J Urban Health.* 2005; 82(3): 378-88.
- [47] Reilly M, Markenson D. Utilizing paramedics for in-patient critical care surge capacity. *Am J Disaster Med.* 2010; 5(3): 163-68.

RECOMMENDATIONS

Based upon the findings in this report, the following recommendations are provided. Individual recommendations are grouped into "Categories" which are in bold type. The recommendations are numbered solely to facilitate future reference and not to imply importance or precedence.

"Double Counting" of Responders: This has been identified as a concern at all levels of response and relates especially to volunteers who may be affiliated with, or a member of, multiple response teams and organizations. Additional research should address:

- *Recommendation #1:* The actual, versus perceived, impact of double counting, to include any differentiation between paid commitment (e.g., National Disaster Medical System [NDMS]) and unpaid (e.g., Medical Reserve Corps).
- *Recommendation #2:* How double counting affects, if at all, workforce preparedness and response.
- *Recommendation #3:* Is there benefit to developing a more formal mechanism, beyond self-reporting, for identifying multiple affiliations of responders, and, if so, should the information collected include data fields such as specialization and paid / unpaid status?

Volunteer Failure to Respond: Research has demonstrated the possibility of volunteers not reporting when requested, primarily due to concerns over the volunteer's family safety, and also due to lack of team identity because of scant opportunities for active organizational involvement during non-emergency periods. Recommended actions to encourage response could include:

- *Recommendation #4:* Establishing processes and procedures to provide care for the volunteer's families while deployed during a domestic disaster response, possibly modeled on Department of Defense (DoD) "family readiness" programs.
- *Recommendation #5:* Developing a program of unit-level training and exercises as well as other team-building events, implemented in conjunction with an on-going internal communications program, to keep the volunteer "plugged in" to the unit between these organizational events.

Impact of Aging Workforce: The expertise of the disaster health workforce will be increasingly constrained due to the progressive aging of the workforce and a relatively decreased replacement rate. Addressing this demographic issue could include:

- *Recommendation #6:* Considering that response plans should assume fewer numbers of available clinical specialists, especially highly trained, sub-specialty clinicians, then access to specialty knowledge will be increasingly challenged and processes will need to be in place to provide the right knowledge, to the right person, at the point of need, but all within the

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- chaotic context of a disaster response. Accordingly, response planning should address this issue.
- *Recommendation #7:* Examine how to compensate for a diminished workforce, to include increased responsibilities and diversification among other elements and levels of the workforce through enhancements to existing training and education programs, to include cross-training. This does not necessarily mean that generalist clinicians will need many hours of additional training but rather they will need a stronger foundation of broadly applicable knowledge with lifelong reinforcement and just-in-time additional knowledge that contextually addresses the needed knowledge. For instance, in a pandemic influenza setting, training on protocols for rapid identification and triage of patients likely needing ventilatory support will need to be offered to a broad spectrum of generalist clinicians.
- *Recommendation #8:* Identify competencies currently performed by physicians that can be performed by other elements of the health workforce, such as, but not limited to, physician assistants, nurses, or emergency medical services personnel, as well as those performed by nurses, certified nursing aides, and other workforce personnel (e.g., respiratory therapists, etc.).

Lack of Integrated and Coordinated Human Capital Development Programming at All Levels: The lack of an intentional human capital development program across the disaster health workforce was noted both vertically (i.e., Federal, State, and local government as well as the private sector) and horizontally (i.e., among Federal agencies). Such an effort should be considered as co-equal to effective national planning. Each major agency and component conducts its own training and education programs and, while there are frequently interagency / multi-level components to exercises and other training events, these exercises are "process" focused on exercise plans and operational procedures. The workforce competency-related training aspects of these events are usually unstated, undocumented, and not evaluated.

- *Recommendation #9:* Establish an integrated workforce training and education baseline addressing validated competencies and standards from all levels of the disaster health community. This should support and be synergistic with all planning efforts.

Emergency Support Function (ESF) #8 Human Capacity Asset Tracking: In the production of this report, no central requirement, capability, or effort was identified that focused on how to track the availability and readiness of disaster health workforce below the team or unit level. Such tracking could facilitate decisions regarding unit employment in response to a disaster.

- *Recommendation #10:* As the ESF#8 Coordinator, recommend the Department of Health and Human Services (HHS) to consider establishing a process among the various components of the disaster health workforce, to include the private sector, to provide real-time information sharing that allows personnel asset visibility capability (e.g., available number, specialty, and location). This information could be included as part of the regular Incident Command System reporting process and used in conjunction with other information to identify possible or actual personnel shortages as well as enable by-specialty reallocation /

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reassignment of available personnel in addition to identifying workforce personnel who might require on-site training.

- *Recommendation #11:* Similarly, recommend HHS to consider establishing a periodic reporting requirement for designated specialties, similar to HaveBed, in order to provide an updated national snapshot of the available ESF#8 disaster health workforce outside of HHS prior to a disaster and that could be used to assist with workforce education initiatives. (This would require the participation of State and local governments, private sector healthcare providers, and the appropriate certifying organizations.)

National Tiered Personnel Readiness: No consistent methodology for capturing and specifying organizational readiness was observed across ESF#8 outside of HHS' Emergency Response Tiers for U.S. Public Health Service officers and DoD readiness categories. Visibility of organizational readiness for deployment / employment is largely ad hoc, which may not be sustainable in a resource constrained environment, and may also impose a psychological burden on personnel which could decrease effectiveness.

- *Recommendation #12:* Establish a longitudinal cycle of readiness levels across ESF#8 (e.g., "immediately available," "ready in 48 hours," "ready in 96 hours," etc.). This would provide a level of predictable order to the response and allow units recently deployed to recover, especially from a psychological perspective. In addition to the "immediately available" units, designation of other units to provide additional capability or replace the initially deployed units on a regularly scheduled basis could be done using a tiered method.

Response Team Organization Vice Local Requirements: Although somewhat outside the scope of this report, we have observed that currently additional capabilities are provided to requesting entities (usually Federal to local) in whole-unit blocks, even when the local responders only need a subset of that block (e.g., perhaps they only need two surgeons, but they get a whole NDMS Disaster Medical Assistance Team which they do not need and may not be able to support, even for basic sustainment requirements).

- *Recommendation #13:* In addition to training for response as an entire unit, recommend medical response teams to examine the various potential sub-units (e.g., NDMS "Strike Teams" or below) they would be able to organize and deploy in order to meet requirements from supported local authorities for capabilities contained within, but less than 100% of their structure. In addition to identifying personnel, equipment, and external support requirements, this examination should include identification of those knowledge-based requirements to allow these sub-units to operate independently from the rest of their parent team, whether as in a stand-alone mode, integrated into another response unit, or augmenting overwhelmed local hospital capability.

Updating and Expanding the Disaster Health Workforce Report: Understanding the landscape of the human capital aspects of an ESF#8 response is instructive for all and especially informs the educational enterprise. Without knowing the anatomy of the disaster health workforce (the "*who*"), it becomes a tremendous challenge to identify *what* this workforce needs to know, *when* they need to know it, and *how* they should acquire this knowledge. While this

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report required significant effort, the scope was deliberately focused on a natural disaster. The information contained in this report will become progressively outdated due to changes in organizational structure and revisions to response plans. A single case study, while informative, does not provide the broader perspective achieved by a limited number of additional case studies. Additional case studies provide the basis for workforce comparisons.

- *Recommendation #14:* The ESF#8 Coordinator (HHS), in consultation with the National Security Staff, Federal Interagency, State, and local stakeholders should recommend an appropriate cycle for updating this report in its entirety or in part, such as performing additional Case Studies. This updating could consider different disaster types (e.g., CBRN), along with new plans and strategies, such as human capital implications of the recently released National Disaster Recovery Framework.^[1] The conference conducted by the National Center indicated a three-year periodicity for updating the entire report. This seems reasonable given the rapidly evolving structure of all-hazards preparedness, response, and recovery planning. In the interim, the National Center proposed to its advisory body, the Federal Education and Training Interagency Group, that one to two additional Case Studies in different locales would be conducted in FY12.

CONCLUSION

The National Center believes the information contained in the report is a valuable addition to the disaster health workforce knowledge base. The extensive literature review and stakeholder engagement has indicated this is a first-ever effort at articulating the disaster health workforce in such a broad scope using multiple methods. The occupational group analysis presented a very constrained portrait of the scale of the selected sub-groups. The case study provided a local to State to Federal perspective. The Federal review provided the opposite perspective. A reasonably clear structure of the disaster health workforce has emerged. This will inform the National Center's efforts to establish competencies, standards, and curricula for this workforce in order to enhance national all-hazards preparedness, response, and recovery. The understanding of the "who" of the workforce provides the skeleton for appending the "what" of competencies and standards and the "how" of curricula. Additionally, this informs the NCDMPH's Federal partners as they seek to develop supporting policies, plans, programs, and exercises.

References

[1] FEMA. National Disaster Recovery Framework [Internet]. 2011 [updated 2011 Nov 9; cited 2011 Nov 14]. Available from: <http://www.fema.gov/recoveryframework/>

APPENDIX A (ESF #8 Annexes)

Emergency Support Function #8-Public Health and Medical Services of the National Response Framework

ESF Coordinator:

Department of Health and Human Services

Primary Agency:

Department of Health and Human Services

Support Agencies:

Department of Agriculture

Department of Commerce

Department of Defense

Department of Energy

Department of Homeland Security

Department of the Interior
Department of Justice

Department of Labor

Department of State

Department of Transportation
Department of Veterans Affairs

Environmental Protection Agency

General Services Administration

U.S. Agency for International Development

U.S. Postal Service

American Red Cross

Introduction

Purpose

Emergency Support Function (ESF) #8 – Public Health and Medical Services provides the mechanism for coordinated Federal assistance to supplement State, tribal, and local resources in response to a public health and medical disaster, potential or actual incidents requiring a coordinated Federal response, and / or during a developing potential health and medical emergency. The phrase "medical needs" is used throughout this annex. Public Health and Medical Services include responding to medical needs associated with mental health, behavioral health, and substance abuse considerations of incident victims and response workers. Services also cover the medical needs of members of the "at risk" or "special needs" population described in the Pandemic and All-Hazards Preparedness Act and in the *National Response Framework (NRF)* Glossary, respectively. It includes a population whose members may have medical and other functional needs before, during, and after an incident.

Public Health and Medical Services includes behavioral health needs consisting of both mental health and substance abuse considerations for incident victims and response workers and, as appropriate, medical needs groups defined in the core document as individuals in need of additional medical response assistance, and veterinary and / or animal health issues.

Scope

ESF #8 provides supplemental assistance to State, tribal, and local governments in the following core functional areas:

- Assessment of public health / medical needs
- Health surveillance
- Medical care personnel
- Health / medical / veterinary equipment and supplies
- Patient evacuation
- Patient care
- Safety and security of drugs, biologics, and medical devices
- Blood and blood products
- Food safety and security
- Agriculture safety and security
- All-hazard public health and medical consultation, technical assistance, and support
- Behavioral health care
- Public health and medical information
- Vector control
- Potable water/wastewater and solid waste disposal
- Mass fatality management, victim identification, and decontaminating remains
- Veterinary medical support

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Policies

The Secretary of Health and Human Services (HHS) leads all Federal public health and medical response to public health emergencies and incidents covered by the *NRF*. The response addresses medical needs and other functional needs of those in need of medical care, including assistance or support in maintaining independence, communicating, using transportation, and / or requiring supervision.

The Secretary of HHS shall assume operational control of Federal emergency public health and medical response assets, as necessary, in the event of a public health emergency, except for members of the Armed Forces, who remain under the authority and control of the Secretary of Defense.

The Secretary of HHS, through the Office of the Assistant Secretary for Preparedness and Response (ASPR), coordinates national ESF #8 preparedness, response, and recovery actions. These actions do not alter or impede the existing authorities of any department or agency supporting ESF #8.

HHS coordinates all ESF #8 response actions consistent with HHS internal policies and procedures (e.g., HHS Concept of Operations Plan for Public Health and Medical Emergencies, and the National Disaster Medical System (NDMS) Four Partner Memorandum of Agreement).

ESF #8 support agencies are responsible for maintaining administrative control over their respective response resources after receiving coordinating instructions from HHS.

The Emergency Management Group (EMG), operating from the HHS Secretary's Operations Center (SOC), coordinates the overall national ESF #8 response for the ASPR and maintains constant communications with the National Operations Center (NOC).

All headquarters and regional organizations (including those involved in other ESFs) participating in response operations report public health and medical requirements to the appropriate ESF #8 representative operating in the National Response Coordination Center (NRCC), the Regional Response Coordination Center (RRCC), or the Joint Field Office (JFO) when activated.

The Joint Information Center (JIC) will be established to coordinate incident-related public information, and is authorized to release general medical and public health response information to the public. When possible, a recognized spokesperson from the public health and medical community (State, tribal, or local) delivers relevant community messages. After consultation with HHS, the lead Public Affairs Officer from other JICs may also release general medical and public health response information.

In the event of a zoonotic disease outbreak and in coordination with ESF #11 – Agriculture and Natural Resources, public information may be released after consultation with the Department

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of Agriculture (USDA). In the event of an oil, chemical, biological, or radiological environmental contamination incident, ESF #8 coordinates with ESF #10 – Oil and Hazardous Materials Response on the release of public health information.

As the lead agency for ESF #8, HHS determines the appropriateness of all requests for release of public health and medical information and is responsible for consulting with and organizing Federal public health and medical subject-matter experts, as needed.

Concept of Operations

General

Upon notification, the ASPR alerts identified HHS personnel to represent ESF #8, as required, in or on the:

Domestic Readiness Group (DRG).
NOC (Planning Element or Watch).
NRCC.
RRCC / JFO.
National / regional teams.
JIC.

Other Federal, State, or tribal operations centers as required by the mission.

HHS notifies and requests all supporting departments and agencies to participate in headquarters coordination activities. The ASPR may request ESF #8 support agencies and organizations to provide liaison personnel to the HHS Headquarters command locations.

HHS Headquarters and ESF #8 staff provide liaison and communications support to regional ESF #8 offices.

Regional ESF #8 staff may be assisted by supporting Federal partners and HHS components. ESF #8 staff in the RRCC or JFO will conduct a risk analysis, evaluate, and determine the capability required to meet the mission objective and provide required public health and medical assistance to State, tribal, and local medical and public health officials.

In the early stages of an incident, it may not be possible to fully assess the situation and verify the level of assistance required. In such circumstances, HHS may provide assistance under its own statutory authorities. In these cases, every reasonable attempt is made to verify the need before providing assistance.

During the response period, HHS has primary responsibility for the analysis of public health and medical assistance, determining the appropriate level of response capability based on the requirement contained in the action request form as well as developing updates and assessments of public health status.

Organization

Headquarters

The Secretary of HHS leads the ESF #8 response. ESF #8, when activated, is coordinated by the ASPR. Once activated, ESF #8 functions are coordinated by the EMG through the SOC.

During the initial activation, HHS coordinates audio and video conference calls with the ESF #8 supporting departments and agencies, and public health and medical representatives from State, tribal, and local officials, to discuss the situation and determine the appropriate initial response actions.

HHS alerts and requests supporting organizations to provide a representative to the EMG to provide liaison support.

Public health and medical subject-matter experts (including partners representing all appropriate populations, such as pediatric populations, populations with disabilities, the aging, and those with temporary or chronic medical conditions) from HHS and ESF #8 organizations are consulted as needed.

Regional

HHS coordinates ESF #8 field response activities according to internal policies and procedures. HHS may designate a Senior Health Official to serve as the senior Federal health official in the JFO.

Regional ESF #8 staff are ready to rapidly deploy, as the Incident Response Coordination Team – Advance (IRCT-A) to provide initial ESF #8 support to the affected location. As the situation matures, the IRCT-A will receive augmentation from HHS and partner agencies transitioning into a full IRCT capable of providing the full range of ESF #8 support to include medical command and control.

The regional ESF #8 staff includes representatives to staff the RRCC and / or JFO, as required, on a 24-hour basis for the duration of the incident.

Actions: Initial Actions

The HHS EMG increases staffing immediately on notification of an actual or potential public health or medical emergency. When activated by the NRCC, HHS consults with the appropriate ESF #8 supporting organizations to determine the need for assistance according to the functional areas listed below.

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Assessment of Public Health / Medical Needs

HHS, in collaboration with the Department of Homeland Security (DHS), mobilizes and deploys ESF #8 personnel to support national or regional teams to assess public health and medical needs, including the needs of at-risk population groups, such as language assistance services for limited English-proficient individuals and accommodations and services for individuals with disabilities. This function includes the assessment of the health care system/facility infrastructure.

Health Surveillance

HHS, in coordination with supporting departments and agencies, enhances existing surveillance systems to monitor the health of the general and medical needs population; carries out field studies and investigations; monitors injury and disease patterns and potential disease outbreaks, blood and blood product biovigilance, and blood supply levels; and provides technical assistance and consultations on disease and injury prevention and precautions.

Medical Care Personnel

Immediate medical response capabilities are provided by assets internal to HHS (e.g., U.S. Public Health Service Commissioned Corps, NDMS, and Federal Civil Service employees) and from ESF #8 supporting organizations.

ESF #8 may request Department of Defense (DOD) support for casualty clearing and staging, patient treatment, and support services such as surveillance and laboratory diagnostics.

ESF #8 may seek individual clinical public health and medical care specialists from the Department of Veterans Affairs (VA) to assist State, tribal, and local public health and medical personnel.

ESF #8 may engage civilian volunteers, such as Medical Reserve Corps, to assist State, tribal, and local public health and medical personnel.

Health / Medical / Veterinary Equipment and Supplies

In addition to deploying assets from the Strategic National Stockpile (SNS), ESF #8 may request DOD or the VA to provide medical equipment, durable medical equipment, and supplies, including medical, diagnostic, and radiation-detecting devices, pharmaceuticals, and biologic products in support of immediate medical response operations and for restocking health care facilities in an area affected by a major disaster or emergency. When a veterinary response is required, assets may be requested from the National Veterinary Stockpile, which is managed by USDA Animal and Plant Health Inspection Service (APHIS).

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Patient Evacuation

ESF #8 is responsible for transporting seriously ill (seriously ill describes persons whose illness or injury is of such severity that there is cause for immediate concern, but there is not imminent danger to life) or injured patients, and medical needs populations from casualty collection points in the impacted area to designated reception facilities. ESF #8 coordinates the Federal response in support of emergency triage and prehospital treatment, patient tracking, and distribution. This effort is coordinated with Federal, State, tribal, territorial, and local emergency medical services officials.

ESF #8 may request DOD, VA, and DHS/Federal Emergency Management Agency (FEMA), via the national ambulance contract, to provide support for evacuating seriously ill or injured patients. Support may include providing transportation assets, operating and staffing NDMS Federal Coordination Centers, and processing and tracking patient movements from collection points to their final destination reception facilities.

DOD is the only recognized Federal partner responsible for regulating and tracking patients transported on DOD assets to appropriate treatment facilities (i.e., NDMS hospitals).

Patient Care

ESF #8 may task HHS components to engage civil service personnel, the Officers from the U.S. Public Health Service Commissioned Corps, the regional offices, and States to engage civilian volunteers and request the VA and DOD to provide available personnel to support prehospital triage and treatment, inpatient hospital care, outpatient services, pharmacy services, and dental care to victims who are seriously ill, injured, or suffer from chronic illnesses who need evacuation assistance, regardless of location.

ESF #8 may assist with isolation and quarantine measures and with point of distribution operations (mass prophylaxis and vaccination). Health care providers and support staff will ensure appropriate patient confidentiality is maintained, including Health Insurance Portability and Accountability Act privacy and security standards, where applicable.

Safety and Security of Drugs, Biologics, and Medical Devices

ESF #8 may task HHS components to ensure the safety and efficacy of and advise industry on security measures for regulating human and veterinary drugs, biologics (including blood and vaccines), medical devices (including radiation emitting and screening devices), and other HHS-regulated products.

Blood, Organs, and Blood Tissues

ESF #8 may task HHS components and request assistance from other ESF #8 partner organizations to monitor and ensure the safety, availability, and logistical requirements of blood, organs, and tissues. This includes the ability of the existing supply chain resources to meet the manufacturing, testing, storage, and distribution of these products.

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Food Safety and Security

ESF #8, in cooperation with ESF #11, may task HHS components and request assistance from other ESF #8 partner organizations to ensure the safety and security of federally regulated foods. (Note: HHS, through the Food and Drug Administration (FDA), has statutory authority for all domestic and imported food except meat, poultry, and egg products, which are under the authority of the USDA Food Safety and Inspection Service. The Environmental Protection Agency establishes tolerance levels for pesticide residues.)

Agriculture Safety and Security

ESF #8, in coordination with ESF #11, may task HHS components to ensure the health, safety, and security of food-producing animals, animal feed, and therapeutics. (Note: HHS, through the FDA, has statutory authority for animal feed and for the approval of animal drugs intended for both therapeutic and nontherapeutic use in food animals as well as companion animals.)

Worker Safety and Health

Under agreement with the U.S. Department of Labor (DOL), DOL is the lead Federal agency for worker safety and health. ESF #8/HHS is a supporting agency. Refer to the *NRF Worker Safety and Health Support Annex* for detailed information.

All-Hazard Public Health and Medical Consultation, Technical Assistance, and Support

ESF #8 may task HHS components and regional offices and request assistance from other ESF #8 partner organizations in assessing public health, medical, and veterinary medical effects resulting from all hazards. Such tasks may include assessing exposures on the general population and on high-risk population groups; conducting field investigations, including collection and analysis of relevant samples; providing advice on protective actions related to direct human and animal exposures, and on indirect exposure through contaminated food, drugs, water supply, and other media; and providing technical assistance and consultation on medical treatment, screening, and decontamination of injured or contaminated individuals. While State, tribal, and local officials retain primary responsibility for victim screening and decontamination operations, ESF #8 can deploy the National Medical Response Teams to assist with victim decontamination.

Behavioral Health Care

ESF #8 may task HHS components and request assistance from other ESF #8 partner organizations in assessing mental health and substance abuse needs, including emotional, psychological, psychological first aid, behavioral, or cognitive limitations requiring assistance or supervision; providing disaster mental health training materials for workers; providing liaison with assessment, training, and program development activities undertaken by Federal, State, tribal, or local mental health and substance abuse officials; and providing additional consultation as needed.

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Public Health and Medical Information

ESF #8 provides public health, disease, and injury prevention information that can be transmitted to members of the general public who are located in or near areas affected in languages and formats that are understandable to individuals with limited English proficiency and individuals with disabilities.

Vector Control

ESF #8 may task HHS components and request assistance from other ESF #8 partner organizations, as appropriate, in assessing the threat of vector-borne diseases; conducting field investigations, including the collection and laboratory analysis of relevant samples; providing vector control equipment and supplies; providing technical assistance and consultation on protective actions regarding vector-borne diseases; and providing technical assistance and consultation on medical treatment of victims of vector-borne diseases.

Public Health Aspects of Potable Water / Wastewater and Solid Waste

ESF #8 may task HHS components and request assistance from other ESF #8 organizations to assist in assessing potable water, wastewater, solid waste disposal, and other environmental health issues related to public health in establishments holding, preparing, and/or serving food, drugs, or medical devices at retail and medical facilities, as well as examining and responding to public health effects from contaminated water; conducting field investigations, including collection and laboratory analysis of relevant samples; providing equipment and supplies as needed; and providing technical assistance and consultation.

Mass Fatality Management

ESF #8, when requested by State, tribal, or local officials, in coordination with its partner organizations, will assist the jurisdictional medico-legal authority and law enforcement agencies in the tracking and documenting of human remains and associated personal effects; reducing the hazard presented by chemically, biologically, or radiologically contaminated human remains (when indicated and possible); establishing temporary morgue facilities; determining the cause and manner of death; collecting antemortem data in a compassionate and culturally competent fashion from authorized individuals; performing postmortem data collection and documentation; identifying human remains using scientific means (e.g., dental, pathology, anthropology, fingerprints, and, as indicated, DNA samples); and preparing, processing, and returning human remains and personal effects to the authorized person(s) when possible; and providing technical assistance and consultation on fatality management and mortuary affairs. In the event that caskets are displaced, ESF #8 assists in identifying the human remains, recasketing, and reburial in public cemeteries.

ESF #8 may task HHS components and request assistance from other ESF #8 partner organizations, as appropriate, to provide support to families of victims during the victim identification mortuary process.

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Veterinary Medical Support

ESF #8 will provide veterinary assistance to ESF #11. Support will include the amelioration of zoonotic disease and caring for research animals where ESF #11 does not have the requisite expertise to render appropriate assistance.

ESF #8 will assist ESF #11 as required to protect the health of livestock and companion and service animals by ensuring the safety of the manufacture and distribution of foods and drugs given to animals used for human food production. ESF #8 supports DHS/FEMA together with ESF #6 – Mass Care, Emergency Assistance, Housing, and Human Services, ESF #9 – Search and Rescue, and ESF #11 to ensure an integrated response to provide for the safety and well-being of household pets and service and companion animals.

ESF #8 Support to ESF #6

ESF #8 supports ESF #6 by providing expertise and guidance on the public health issues of the medical needs populations.

ACTIONS: Continuing

ACTIONS Headquarters and Regional Support

ESF #8 continuously acquires and assesses information on the incident. The EMG, ESF #8 regional staff, and ESF #8 liaison staff in the RRCC / JFO continue to identify the nature and extent of public health and medical problems and establish appropriate monitoring and public surveillance. Other sources of information may include:

- State incident management authorities.
- Officials of the responsible jurisdiction in charge of the disaster scene.
- ESF #8 support agencies and organizations.
- Various Federal officials in the incident area.
- State health, agricultural, or animal health officials.
- State emergency medical services authorities.
- Tribal officials.

Because of the potential complexity of the public health and medical response, conditions may require ESF #8 subject-matter experts to review public health and medical information and advise on specific strategies to manage and respond to a specific situation in the most appropriate manner.

Activation of Public Health / Medical Response Teams

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HHS components are deployed directly as part of the ESF #8 response. Public health and medical personnel and teams provided by ESF #8 are deployed under a DHS / FEMA mission assignment.

Coordination of Requests for Medical Transportation

In a major public health or medical emergency, local transportation assets may not be sufficient to meet the demand. State, tribal, and local requests for Federal medical transportation assistance are executed by ESF #8 in coordination with DHS / FEMA. Such assistance may include accessible transportation for medical needs populations

Coordination for Obtaining, Assembling, and Delivering Medical Equipment and Supplies to the Incident Area

ESF #8 will coordinate with DHS / FEMA, VA, DOD, the General Services Administration (GSA), and other Federal partners as required to arrange for the procurement and transportation of medical and durable medical equipment and supplies.

Communications

ESF #8 establishes communications necessary to coordinate Federal public health, medical, and veterinary medical assistance effectively.

Public Affairs Information Requests

Requests for information may be received from various sources, such as the media and the general public, and are referred to ESF #15 – External Affairs for action and response. ESF #8 makes available language-assistance services, such as interpreters for different languages, telecommunications devices for the deaf, and accessible print media, to facilitate communication with all members of the public.

After-Action Reports/Lessons Learned

ESF #8, on completion of the incident, prepares summary after-action and lessons learned reports. These reports identify key problems, indicate how they were solved, and make recommendations for improving response operations. ESF #8 will request input and coordinate the preparation of the after-action and lessons learned reports with all supported and supporting agencies.

Responsibilities

Primary Agency: HHS

Leads the Federal effort to provide public health and medical assistance to the affected area.

Coordinates staffing of the HHS EMG to support the response operation.

Requests appropriate ESF #8 organizations to activate and deploy public health, medical, and veterinary medical personnel, equipment, and supplies in response to requests for Federal public health and medical assistance, as appropriate.

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Uses HHS personnel (U.S. Public Health Service Commissioned Corps, NDMS, Federal Civil Service, and civilian volunteers) to address public health, medical, and veterinary medical needs.

Assists and supports State, tribal, and local officials in performing monitoring for internal patient contamination and administering pharmaceuticals for internal decontamination.

Assists State, tribal, and local officials in establishing a registry of potentially exposed individuals, performing dose reconstruction, and conducting long-term monitoring of this population for potential long-term health effects.

Confidentially monitors blood and blood product supplies throughout the year using the

Blood Availability and Safety Information System as baseline data for ESF #8 activation.

Liaisons with the AABB Interorganizational Task Force on Domestic Disasters and Acts of Terrorism (i.e., AABB TF) to assist in logistical requirements and to coordinate a national public blood announcement message for the need to donate.

Monitors blood and blood product shortages and reserves, including the safety and availability of the blood supply.

Activates NDMS as necessary to support response operations.

Evaluates requests for deployment or redeployment of the SNS and Federal Medical Stations based upon relevant threat information.

Coordinates public health and medical support, patient evacuation, and movement requirements with other primary and supporting departments, agencies, and governments throughout the incident.

Assures the safety and security of food in coordination with other responsible Federal agencies (e.g., USDA). In cooperation with State, tribal, and local officials, assesses whether food manufacturing, food processing, food distribution, food service, and food retail establishments in the affected area are able to provide safe and secure food.

In cooperation with State, tribal, and local officials as well as the food industry, conducts tracebacks or recalls of adulterated products.

In cooperation with Federal, State, tribal, and local officials, ensures the proper disposal of contaminated products and the decontamination of affected food facilities in order to protect public health.

Provides support for public health matters for radiological incidents as a member of the Advisory Team for Environment, Food, and Health.

Table 39: Support Agencies	
Agency	Functions
Department of Agriculture	<p>If available, provides appropriate personnel, equipment, and supplies, primarily for communications, aircraft, and the establishment of base camps for deployed Federal public health and medical teams. Resources will be assigned commensurate with each unit's level of training and the adequacy and availability of equipment. ESF #4 – Firefighting or the USDA/Forest Service Disaster and Emergency Operations Branch is the contact for this support.</p> <p>Provides support for public health matters for radiological incidents as a member of the Advisory Team for Environment, Food, and Health.</p> <p>USDA also supports a multiagency response to a domestic incident through:</p> <p>Provision of nutrition assistance.</p> <p>Control and eradication of an outbreak of a highly contagious or an economically devastating animal disease.</p> <p>Assurance of food safety and security, in coordination with other responsible Federal agencies, or any combination of these requirements.</p> <p>Provision of appropriate personnel, equipment, and supplies coordinated through the APHIS Emergency Management Operations Center. Support is primarily for coordinating disposal issues for animal carcasses resulting from disease, protecting livestock animal health, reducing the potential for livestock to transmit zoonotic diseases, and providing technical support and subject- matter expertise for the safety and well-being of household pets.</p>
Department of Commerce	<p>National Oceanic and Atmospheric Administration: Provides near real-time transport, dispersion, and predictions of atmospheric releases of radioactive and hazardous materials that may be used by authorities in taking protective actions related to sheltering and evacuation of people.</p>

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Department of Defense	<p>Alerts DOD NDMS Federal Coordinating Centers (FCCs) (Army, Navy, Air Force) and provides specific reporting/regulating instructions to support incident relief efforts.</p> <p>Alerts DOD NDMS FCCs to activate NDMS patient reception plans in a phased, regional approach, and when appropriate, in a national approach.</p> <p>At the request of HHS, provides support for the evacuation of patients and medical needs populations to locations where hospital care or outpatient services are available.</p> <p>Using available DOD transportation resources, in coordination with the NDMS Medical Interagency Coordination Group, evacuates and manages victims/patients from the patient collection point in or near the incident site to NDMS patient reception areas.</p> <p>Provides available logistical support to public health/medical response operations.</p> <p>Provides available medical personnel for casualty clearing/staging and other missions as needed including aero-medical evacuation and medical treatment. Mobilizes and deploys available Reserve and National Guard medical units, when authorized and necessary to provide support.</p> <p>Coordinates patient reception, tracking, and management to nearby NDMS hospitals, VA hospitals, and DOD military treatment facilities that are available and can provide appropriate care.</p> <p>Provides available military medical personnel to assist ESF #8 in the protection of public health (such as food, water, wastewater, solid waste disposal, vectors, hygiene, and other environmental conditions).</p> <p>Provides available veterinary military personnel to assist ESF #8 personnel in the medical treatment of animals.</p> <p>Provides available DOD medical supplies for distribution to mass care centers and medical care locations being operated for incident victims with reimbursement to DOD.</p> <p>Provides available emergency medical support to assist State, tribal, or local officials within the disaster area and the surrounding vicinity. Such services may include triage, medical treatment, mental health support, and the use of surviving DOD medical facilities within or near the incident area.</p>
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Department of Defense (Continued)	<p>Provides evaluation and risk management support through use of Defense Coordinating Officers, Emergency Preparedness Liaison Officers, and Joint Regional Medical Planners.</p> <p>Provides available blood products in coordination with HHS.</p> <p>Provides medical surveillance and laboratory diagnostics and confirmatory testing in coordination with HHS.</p> <hr/> <p>U.S. Army Corps of Engineers: Through ESF #3 – Public Works and Engineering, provides technical assistance, equipment, and supplies as required in support of HHS to accomplish temporary restoration of damaged public utilities affecting public health and medical facilities. In the event of a catastrophic mass fatality incident, assists with the temporary interment of the dead.</p>
Department of Energy / National Nuclear Security Administration	<p>Coordinates Federal assets for external monitoring and decontamination activities for radiological emergencies pursuant to criteria established by the State(s) in conjunction with HHS.</p> <p>Provides, in cooperation with other Federal and State agencies, personnel and equipment, including portal monitors, to support initial screening and provides advice and assistance to State, tribal, and local personnel conducting screening/decontamination of persons leaving a contaminated zone.</p> <hr/> <p>Radiological Assistance Program</p> <p>Provides regional resources (personnel, specialized equipment, and supplies) to evaluate, control, and mitigate radiological hazards to workers and the public.</p> <p>Provides limited assistance in the decontamination of victims.</p> <p>Assists State, tribal, or local officials in the monitoring and surveillance of the incident area.</p> <hr/> <p>National Atmospheric Release Advisory Capability: Provides near real-time transport, dispersion, and dose predictions of atmospheric releases of radioactive and hazardous materials that may be used by authorities in taking protective actions related to sheltering and evacuation of people.</p>

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	Federal Radiological Monitoring and Assessment Center (FRMAC): Assists public health and medical authorities in determining radiological dose information; assists in providing coordinated gathering of environmental radiological information and data; assists with consolidated data sample analyses, evaluations, assessments, and interpretations; and provides technical information.
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<p>Department of Homeland Security</p>	<p>Provides communications support in coordination with ESF #2 – Communications.</p> <p>Maintains situational awareness and the Common Operating Picture via the Homeland Security Information Network.</p> <p>Assists in providing information/liaison with emergency management officials in NDMS FCC areas.</p> <p>Identifies and arranges for use of DHS/U.S. Coast Guard (USCG) aircraft and other assets in providing urgent airlift and other transportation support.</p> <p>Directs the Nuclear Incident Response Team (NIRT), when activated, and ensures coordination of NIRT activities with the ESF primary agency and designated coordinating agency under the Nuclear/Radiological Incident Annex.</p> <p>Through the Interagency Modeling and Atmospheric Assessment Center (IMAAC), provides predictions of hazards associated with atmospheric releases for use in emergency response. The IMAAC provides a single point for the coordination and dissemination of Federal dispersion modeling and hazard prediction products that represent the Federal position during an incident.</p> <p>Provides enforcement of international quarantines through DHS/USCG, Customs and Border Protection, and Immigration and Customs Enforcement.</p> <p>FEMA</p> <p>Provides logistical support for deploying ESF #8 medical elements required and coordinates the use of mobilization centers/staging areas, transportation of resources, use of disaster fuel contracts, emergency meals, potable water, base camp services, supply and equipment resupply, and use of all national contracts and interagency agreements managed by DHS for response operations.</p> <p>Provides Total Asset Visibility through the use of Global Positioning System (GPS) tracking services to enable visibility of ESF #8 resources through mapping capabilities and reports.</p> <p>Assists in arranging transportation to support evacuating patients who are too seriously ill or otherwise incapable of being evacuated in general evacuation conveyances.</p> <p>Provides tactical communications support through Mobile Emergency Response Support, inclusive of all types (i.e., deployable satellite and RF/radio communications)/</p>
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	Office of Infrastructure Protection: Provides situational awareness, cross- sector coordination, and prioritized recommendations regarding critical infrastructure and key resources.
Department of the Interior	If available, provides appropriate personnel, equipment, and supplies, primarily for communications, aircraft, and the establishment of base camps for deployed Federal public health and medical teams. Resources will be assigned commensurate with each unit's level of training and the adequacy and availability of equipment. ESF #4 or the DOI Operations Center is the contact for this support.
Department of Justice	<p>Assists in victim identification, coordinated through the Federal Bureau of Investigation (FBI).</p> <p>Provides State, tribal, or local officials with legal advice concerning identification of the dead.</p> <p>Provides HHS with relevant information of any credible threat or other situation that could potentially threaten public health. This support is coordinated through FBI Headquarters.</p> <p>Provides security for the SNS, secure movement of needed blood and blood product supply, and quarantine enforcement assistance, if required.</p> <p>Establishes an adult missing persons call center and assists in the disposition of cases.</p> <p>Shares missing persons data with ESF #8 and ESF #13 – Public Safety and Security in support of identification of the dead and seriously wounded.</p>
Department of Labor	<p>Coordinates the safety and health assets of cooperating agencies and the private sector to provide technical assistance and conduct worker exposure assessment and responder and worker risk management within the Incident Command System. This assistance may include 24/7 site safety monitoring; worker exposure monitoring; health monitoring; sampling and analysis; development and oversight of the site-specific safety and health plan; and personal protective equipment selection, distribution, training, and respirator fit-testing.</p> <p>Provides personnel and management support related to worker safety and health in field operations during ESF #8 deployments.</p>

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Department of State	<p>Coordinates international activities related to chemical, biological, radiological, and nuclear incidents and events that pose transborder threats as well as naturally occurring disease outbreaks with international implications. Contributes to the development of projections of the international consequences of the event (e.g., disease spread, quarantine, isolation, travel restrictions, pharmaceutical supply and distribution, and displaced persons) through coordination with foreign states and other international stakeholders, and assists in communicating real-time actions taken by the United States and U.S. projections of the international consequences of the event.</p> <p>Assists with coordination with foreign states concerning offers of support, gifts, offerings, donations, or other aid. This includes establishing coordination with partner nations to identify the U.S.-validated immediate support in response to an incident.</p> <p>Acts as the health and medical services information conduit to U.S.</p>
Department of Transportation (DOT)	<p>In collaboration with DOD, GSA, and other transportation-providing agencies, provides technical assistance in identifying and arranging for all types of transportation, such as air, rail, marine, and motor vehicle and accessible transportation.</p> <p>Coordinates with the Federal Aviation Administration for air traffic control support for priority missions.</p> <p>At the request of ESF #8, provides technical support to assist in arranging logistical movement support (e.g., supplies, equipment, blood supply, etc.) from DOT resources, subject to DOT statutory requirements.</p>

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Department of Veterans Affairs	<p>Subject to the availability of resources and funding, and consistent with the VA mission to provide priority services to veterans, when requested.</p> <p>Coordinates with participating NDMS hospitals to provide incident-related medical care to authorized NDMS beneficiaries affected by a major disaster or emergency.</p> <p>Furnishes available VA hospital care and medical services to individuals responding to, involved in, or otherwise affected by a major disaster or emergency, including members of the Armed Forces on active duty.</p> <p>Designates and deploys available medical, surgical, mental health, and other health service support assets.</p> <p>Provides a Medical Emergency Radiological Response Team for technical consultation on the medical management of injuries and illnesses due to exposure to or contamination by ionizing radiation.</p> <p>Alerts VA FCCs and provides reporting instructions to support incident relief efforts.</p> <p>Alerts VA FCCs to activate NDMS patient reception plans in a phased, regional approach, and when appropriate, in a national approach.</p> <p>Buries and memorializes eligible veterans and advises on methods for interment of the dead during national or homeland security emergencies.</p>
Environmental Protection Agency	<p>Provides technical assistance and environmental information for the assessment of the public health/medical aspects of situations involving hazardous materials, including technical and policy assistance in matters involving water and wastewater systems, for critical health care facilities.</p> <p>Provides support for public health matters for radiological incidents through the FRMAC and the Advisory Team for Environment, Food, and Health.</p> <p>Assists in identifying alternate water supplies and wastewater collection and treatment for critical health care facilities.</p> <p>Provides environmental technical assistance (e.g., air monitoring) and information in the event temporary interment is necessary and/or human remains are contaminated.</p>
General Services Administration	<p>Provides resource support for ESF #8 requirements as requested to meet the needs of the affected population.</p>
U.S. Agency for International Development	<p>Office of Foreign Disaster Assistance: Assists in the tracking and distribution of international support assets.</p>

Appendix A

U.S. Postal Service	Assists in the distribution and transportation of medicine, pharmaceuticals, and medical information to the general public affected by a major disaster or emergency, as needed.
American Red Cross	<p>Provides emergency first aid, consisting of basic first aid and referral to appropriate medical personnel and facilities, supportive counseling, and health care for minor illnesses and injuries to incident victims in mass care shelters, the JFO, selected incident cleanup areas, and other sites deemed necessary by the primary agency.</p> <p>Assists community health personnel subject to staff availability.</p> <p>Provides supportive counseling for family members of the dead, for the injured, and for others affected by the incident.</p> <p>Supports NDMS evacuation through the provision of services for accompanying family members/caregivers in coordination with Federal, State, tribal, and local officials.</p> <p>Provides available personnel to assist in temporary infirmaries, immunization clinics, morgues, hospitals, and nursing homes. Assistance consists of administrative support, logistical support, or health services support within clearly defined boundaries.</p> <p>Acquaints families with available health resources and services, and makes appropriate referrals.</p>
American Red Cross	At the request of HHS, coordinates with the American Association of Blood Banks Inter-organizational Task Force on Domestic Disasters and Acts of Terrorism to provide blood products and services as needed through regional blood centers.

APPENDIX B (CASE STUDY QUESTIONNAIRE)

Report on Health Professions Workforce Los Angeles County Case Study Meeting Topic Guide

Main Focus

- ESF#8 Natural Disaster Workforce (People)
- Emphasis on three occupational groups:
 - Emergency & Critical Care Physicians
 - Emergency & Critical Care Nurses
 - Paramedics

Information Needs (Pertaining to ESF#8 Natural Disaster)
<ul style="list-style-type: none">• Workforce<ul style="list-style-type: none">▪ Teams available▪ Surge capability available (if applicable)▪ <p>As applicable to team & surge workforce</p> <ul style="list-style-type: none">• Composition<ul style="list-style-type: none">▪ Overall number of members / volunteers▪ Professions involved, particular interest on above listed occupational groups▪ Number of members / volunteers in each profession• Structure<ul style="list-style-type: none">▪ Finding recruits / volunteers▪ Tracking recruits / volunteers▪ Team requirements (i.e., minimum number of doctors, nurses, paramedics, people per team)▪ Member/volunteer requirements (i.e., qualifications, standards, competencies)▪ Tracking credentials and / or licenses▪ Disaster-related training▪ Contacting workforce for activation• Interaction with Others<ul style="list-style-type: none">▪ Other contacts (team/people/organization/association) work with during disaster. This can be at the same (i.e., city to city level) or different (i.e., city to state) level.

APPENDIX C: WORKFORCE CONFERENCE AGENDA AND ATTENDANTS

National Conference on the Natural Disaster Health Workforce

DoubleTree by Hilton Hotel, Washington, DC – Crystal City
300 Army Navy Drive
September 19-20, 2011

Objectives of the Conference are:

1. To contribute to selected aspects of the workforce report such as workforce supply, volunteerism and barriers
2. To consider input on next steps for additional case studies and for expanding the scope of the report beyond natural disasters
3. To present the initial case study and seek feedback on the pilot case study methodology

Day 1: Monday, September 19, 2011

8:00 Continental Breakfast and Registration

9:00 Opening Remarks – Dr. Kenneth Schor

9:30 Speaker

Estimating the Capabilities and Capacities of the Disaster Medicine Workforce

Dr. Andrew Garrett

Deputy Chief Medical Advisor, NDMS

Interim Director, ECCC/HHS/ASPR

10:00 Break

10:15 Panel Discussion: Natural Disaster through the Eyes of Local Health Responders and
How the
Feds Can Really Help

a. John Burke, Sandwich, MA Fire Department

b. Dr. Gloria Addo-Ayensu, Director, Fairfax County Health Department

c. Jee Eun Kim, Volunteer Coordinator, LA County Dept. of Public Health

12:00 Working Lunch: Speaker

Dr. Dale Smith, Senior Vice President, USUHS

- 1:30 Working Groups
- a. Cross-Cutting Issues Group
 - b. Future Plans Group
 - c. Case Study Methods Group

3:30 Break

3:45 Return to Working Groups

5:00 Adjourn

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Objectives of the Conference are:

1. To contribute to selected aspects of the workforce report such as workforce supply, volunteerism and barriers
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3. To present the initial case study and seek feedback on the pilot case study methodology

Day 2: Tuesday, September 20, 2011

8:00 Continental Breakfast

9:00 Speaker
Dr. Matthew Hepburn, National Security Staff

- 9:45 Working Groups
- a. Cross-Cutting Issues Group
 - b. Future Plans Group
 - c. Case Study Methods Group

11:30 Working Lunch: Group Reports

1:30 Speaker
Joplin, Missouri
Dr. Robert Dodson, Medical Director of Trauma, St. John's Regional Medical Center,
Joplin, MO

2:30 Conclusion and Next Steps – Dr Kenneth Schor

3:00 Adjourn

Conference Attendees

David **Adams**, MA, BSN (DHS / OHA)
Gloria **Addo-Ayensu**, MD MPH (Fairfax County Health Department)
Majed **Aljohani** (Beth Israel Hospital / Emergency Medicine)
Stephen **Allen** (HHS / ASPR)
Stacey **Arnesen**, MS (NIH / NLM)
Badar **Alotaibi**, MD (Harvard University)
Brian **Altman**, PhD (NCDMPH)
Sadia **Azmat**, BA
Jean **Bail**, EdD, RN, MSN, CEN, MEP, EMT-P (Disaster Medicine & Management Program)
Keith **Bauder** (IUP Research Institute Business & Technology Group)
Dave **Berry** (NCDMPH)
Katherine **Boxer**, BS (SUNY)
John **Burke** (BU)
Janine **Canlas**, BS (National Association of School Nurses)
Srihari **Cattamachi**, MD, (BIDMC)
CAPT DW **Chen**, MD, MPH (Assistant Secretary of Defense for Health Affairs)
Laurie **Chow**, MA, MPH (NCDMPH)
Jayda **Clark**, (NCDMPH)
Richard **Cocrane**, MA, MPH (LMI)
Bernard **Cook**, MA (L-3 Communications / Emergency Management)
Mary Pat **Couig**, MPH, RN (DVA / ONS)
Christine **Cunningham** (LMI)
CDR Carolyn **Currie**, MSN, MPH (U.S. Navy / BUMED)
Anthony De La **Rosa**, MBA (AHMC Monterey Park Hospital)
CDR Patrick **Denis**, RN, MBA, BSN, BS, CNOR (HHS / OSG)
Mark **Diaz** (Walter Reed Army Medical Center)
LTC Anne **Drabczyk**, MHA (NACCHO)
CAPT Kimberly **Elenberg**, BSN, MS (HHS / OSG)

Lt Col Leigh Ann **Erdman**, MHA (U.S. Air Force)
Kristen **Finne** (HHS / ASPR)
Elaine **Forte**, BS, MT (Yale New Haven Health System)
Andrew **Garrett**, MD, MPH (HHS / ASPR)
Jennifer **Hannah** (HHS / ASPR)
CAPT Jeff **Salvon-Harman**, MD, FS (USCG / HSWL SC)
COL Mark **Harris**, MD, MPH, MBA (HHS)
Cynthia **Hovor**, MS (NCDMPH)
Barbara **Jantausch**, MD (Children's National Medical Center)
Jee **Kim**, MPH (MRC LA)
Mark **Kirk**, MD (DHS / OHA)
Andre **La Prairie** (Public Health Agency of Canada)
Raj **Lal**, MD, MBA, MPA (IL USAR TFI & IMERT)
Col Nicholas **Lezama** (USUHS / PMB)
COL Greg **Limberis** (Assistant Secretary of Defense for Reserve Affairs)
Gregg **Lord**, MS (National Commission on Children & Disasters)
Daniel **Mcdonald**, PhD (HHS / CDC)
Joanne **McGovern**, BS (Yale University)
Ralph **Montgomery**, USUHS/ MHAP (HHS / ASPR)
Tim **Moriarty**, MA (NCDMPH)
Andrei **Nabakowski**, PharmD (U.S. Public Health Service / OFRD)
LT Skip **Payne**, MSPH (HHS / OSG / MRC)
CDR Paul **Reed**, MD (HHS/ OSG / OFRD)
William **Rodriguez**, MD, PhD (FDA, OPT / OC)
Albert **Romanosky**, MD, PhD (Maryland Department of Health and Mental Hygiene)
Alice **Rosenbloom**, RN (Lifebridge Health / HCU)
Kenneth **Schor**, DO, MPH (NCDMPH)
CAPT Lynn **Slepski**, PhD, RN, CCNS (DOT)
Dale **Smith**, PhD (USUHS)
Kandra **Strauss-Riggs**, MPH (NCDMPH)
Benjamin **Swig**, MPH (HHS)

Kevin **Thomas**, PhD, MBA (BU)

Lauren **Walsh**, MPH (AMA)

Chris **Watson**, MD, MPH (Walter Reed NMMC)

Michael **Walter**, MD, MA (LLU DEPT MEDICINE)

LCDR Sean-David **Waterman**, BSN, MSHS (HHS / OSG / OFRD)

Ian **Weston**, MPP, EMT (EMS for Children)

Joyce **Williams**, DNP (Johns Hopkins School of Nursing)

Sara **Wilson**, MSN BSN (HHS)

Rebecca **Zukowski**, MSN, RN (NCDMPH)